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AMINO ACID UTILIZATION IN THE SURGICAL PATIENT

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The dietary need for protein in a surgical patient depends mainly on the degree of preoperative and operative loss of protein reserves and the duration of convalescence. The greater the debilitation, the greater the need for protein replenishment, in order both to lessen surgical hazards and to hasten postoperative recovery. Effective therapeutic management requires, therefore, an optimal utilization of protein in conjunction with other dietary essentials, and, inasmuch as the nutritive potentiality of a dietary protein is determined largely by its amino acid composition, tissue synthesis must depend, in turn, on the degree of utilization of these amino acids in the course of convalescence.

Although protein deficiency may not become evident until the later stages of undernutrition, it may be suspected earlier as a result of a careful dietary history and a record of a loss of weight. The causes of protein deficiency may be primary or secondary; i. e., the deficiency may result either from an inadequate protein intake or from a caloric deficit. Aside from the loss of adipose tissue, however, tissue loss usually means a loss of tissue protein, and the therapeutic problem centers principally around the reasons for the loss and the remedial measures indicated for its correction. Convalescence, in other words, is essentially a process of tissue synthesis, and it is dependent on such varied syntheses as the regeneration of muscle mass, of blood and tissue proteins, erythrocytes, leukocytes, lymphoid tissues, etc., and of antibodies, certain hormones and enzyme systems.

Because a debilitated patient has undergone a steady loss of tissue reserves of protein, carbohydrate, fat, vitamins and minerals, the recovery of lost health and strength requires repletion of depleted reserves. If the undernutrition is due primarily to an inadequate ingestion of dietary essentials, an ample intake of all these missing essentials should remedy the nutritional deficiency, regardless of the manner whereby they are supplied; i. e., whether by ingestion, parenteral alimentation or blood and plasma transfusions. If, on the other hand, the undernutrition is secondary to "conditioning factors" [1] as emphasized by Jolliffe, these interfering factors may so impair the metabolic mechanisms as to make elimination of the conditioning factors the primary problem and the nutritional deficiencies themselves secondary. In the surgical patient it is obvious that both causes may operate and that, in consequence, the attainment of an adequate state of nutrition becomes correspondingly more difficult, although nonetheless imperative. The surgical patient, therefore, perhaps above all others, requires as completely adequate a diet as possible, both in composition and in utilization. The practical problem is, however, what dietary conditions will best accomplish these objectives. In other words, how may a surgical patient be best supplied with all dietary essentials, before and after operation, in order to restore the depleted tissues most quickly and completely to their original integrity?

Of all the dietary essentials calories must be accorded a fundamental role, representing as they do the thermal units which supply energy for intermediary metabolism, and the caloric intake must obviously be in excess of basal requirements if it is to supply energy essential for tissue synthesis. Otherwise the body will sacrifice fat, carbohydrate and tissue protein in order to obtain energy; in consequence an inadequate supply of dietary calories will continue thereby to act as a limiting factor in the processes of tissue synthesis. In healthy man there is evidence that at least 1,500 to 1,800 calories per day are necessary for efficient retention of dietary nitrogen.

Why are calories so necessary for effective convalescence? Although the fact has long been recognized, the following experiments, performed in our laboratory, afford additional evidence of their importance. Protein-depleted adult male albino rats were used in which protein deficiency had been induced by the preliminary feeding of a ration low in protein but adequate in calories, vitamins and minerals. On such a regimen the animals lost weight and became anemic and hypoproteinemic. They could thus serve as convenient "testing machines" for the estimation of the speed of tissue synthesis under varying nutritional conditions. When these animals were kept on a protein-free basal ration adequate in calories, vitamins and minerals, they continued steadily to lose weight. If, however, high quality protein was added to the basal ration, rapid recovery occurred. Such a type of ration thus made possible the evaluation of caloric needs in relation to protein content of the ration, convalescence being measured in terms of weight recovery and of

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1. Jolliffe, N.: Conditioned Malnutrition, in Handbook of Nutrition, Chicago, American Medical Association, 1943.

regeneration of plasma protein and hemoglobin. For example, when groups of protein-depleted rats were fed repletion rations adequate in protein content but at varying caloric levels, tissue synthesis proceeded in direct relation to calories. Below approximately 70 per cent of the caloric content of the standard repletion ration, recovery of weight was poor; above this level, the addition of extra calories had but slight additive effect. In other words, tissue synthesis requires enough calories to facilitate the conversion of amino acids into tissue protein, but above a certain level additional calories are largely superfluous. The practical problem, therefore, is to insure the presence of enough calories to promote optimal tissue synthesis.

The story, however, does not end here; calories per se do not build tissues; these are built from dietary proteins by conversion of their amino acids into tissue protein. Without these amino acids in adequate amounts, and particularly without those amino acids which the body itself cannot synthesize, tissue synthesis must inevitably slow down or stop. Here, again, experiments with protein-depleted rats may be cited. For example, when the animals were fed a series of standard high calory repletion rations, each containing a decreasing amount of high quality protein, convalescence proceeded in direct relation not with the calory value, for this was always the same, but with protein content. With smaller amounts of protein, weight recovery was negligible, despite an ample intake of calories. In other words, whether for effective recovery of lost weight or for the regeneration of plasma protein and hemoglobin, these experiments demonstrate (1) the mutual indispensability of two dietary essentials, high quality protein and calories and (2) the fact that a deficiency of either calories or protein may constitute a limiting factor which hampers effective convalescence.

Further evidence that protein rather than calories is the determining nutritive factor is suggested by the observations of Mulholland and colleagues in their studies of the healing of decubitus ulcers in man.[2] Thus, in a patient with bed sores they noted the following: During the first six days of observation with the patient on a high caloric (approximately 9,000 calories) low nitrogen intake (18 Gm.), the patient was in negative nitrogen balance, was losing weight and showed "no improvement in the ulcers." On the seventh day he was placed on a high caloric and high amino acid diet (48 Gm. of nitrogen) with a resulting positive nitrogen retention. "A gain in weight, an upswing in the plasma protein concentration took place, and healing became perceptible on the fourth day after the high protein diet was started." Therefore, as they said, "it was not high caloric intake which initiated the healing."

The processes of tissue synthesis, however, require not only amino acids and energy; they also require the cooperation of enzyme systems, and in the course of undernutrition some of these may have become severely impaired. Moreover, tissue stores of vitamins and minerals also may have become depleted. An ample supply of vitamins in particular, therefore, especially those of the B complex, must be insured in convalescence. Although comparatively little is known as yet about the detailed role of vitamins in protein synthesis, there can no longer be any doubt about their essentiality or that they are as mutually indispensable as are the amino acids and calories.

Despite the present uncertainty about the mechanisms of protein synthesis, there is increasing evidence that when the process starts, it is evidently rapid and probably "all or none" in character. For example, W. C. Rose has emphasized[3] "the fundamental and irrefutable fact that the animal organism is unerringly accurate in its synthesis. If a tissue is to be formed at all every component required must be available or be capable of being manufactured by the cells; otherwise the synthesis will not occur. If growth follows the addition of an essential constituent to an adequate diet, it does so because cell reactions which could not proceed in the absence of the added factor are now made possible." In the light of the discussion thus far one might presume that the synthesizing mechanisms concerned in tissue fabrication may operate effectively only under the following general conditions: 1. They must have available all essential dietary constituents. 2. The synthesizing cells themselves must be uninjured if they are to obtain the energy necessary for the task of synthesis. 3. Conditions must be such that these cells, once the synthesis starts, can do a perfect job.

TISSUE PROTEIN SYNTHESIS

Inasmuch as a major problem in convalescence is the rebuilding of wasted muscle tissue, it is important to examine the possible mechanism of muscle protein synthesis. In view of the atrophy, it is obvious that muscle must be rebuilt by conversion of amino acids into muscle protein. The amino acid composition of muscle tissue, therefore, should help to elucidate the mechanism of synthesis. Beach and colleagues,[4] in studying this question, have demonstrated a remarkable similarity in the amino acid composition of muscle meats from various species. Moreover, they have shown that when several of the essential amino acids in meat are compared on a molecular basis a definite proportionality relationship exists between them. Thus if the value for tryptophane is taken as unity, that for lysine is 10; for threonine, 7; for methionine, 4, and for histidine approximately 2. These figures evidently mean that, in the synthesis of muscle protein, for every molecule of tryptophane used, there is a corresponding need for 10 molecules of lysine, for 4 molecules of methionine, etc. If a similar comparison is made of the amino acid relationships in purified rabbit myosin (Bailey[5]) a somewhat similar proportionality relationship is also evident. These findings suggest, therefore, that in the utilization of dietary protein for tissue synthesis there is presumably an over-all proportionality relationship, and, inasmuch as high quality proteins promote good tissue synthesis, they should be examined with respect to their amino acid proportionality ratios. When this is done for defatted whole egg protein, which some consider to be an almost ideal dietary protein, it is seen that, if the percentage figures

2. Mulholland, J. H.; Co Tui; Wright, A. M.; Vinci, V., and Shaferoff, B.: Protein Metabolism and Bed Sores, Ann. Surg. **118:** 1015-1023, 1943.

3. Rose, W. C.: Does the Amount of Food Consumed Influence the Growth of an Animal? Science **67:** 488-489, 1928.

4. Beach, E. F.; Munks, B., and Robinson, A.: The Amino Acid Composition of Animal Tissue Protein, J. Biol. Chem. **148:** 431-439, 1943.

5. Bailey, K.: The Proteins of Skeletal Muscle, in Edsall, J. T., and Anson, M. L.: Advances in Protein Chemistry, Academic Press, 1944, vol. 1, pp. 289-317.

for tryptophane are taken as unity, the values for leucine are 6; for isoleucine, valine and lysine, 5, etc. These calculations indicate that a high quality protein contains within it an assortment of essential amino acids in definite proportions one to another and that in the processes of tissue synthesis these essential amino acids may be made available to the synthesizing mechanisms in proportional amounts.

This proportionality relationship becomes all the more important because of accumulating evidence of the lack in the tissues of reserves of individual essential amino acids which might otherwise be made available for free interchange in time of urgent need. If this were not the case the absence from the diet of a single indispensable amino acid would not be followed so quickly by the profound pathologic manifestations of negative nitrogen balance, loss of weight, appetite, etc. These phenomena appear so quickly—i. e., within a few hours, in the rat, dog and man—when the diet lacks only a single essential amino acid, that it seems difficult to postulate the ready availability of any essential amino acid reserves. Moreover, the subject comes quickly back into nitrogen equilibrium when the missing dietary essential is restored to the diet. Evidently, then, the tissues cannot abstract enough of the essential amino acids to compensate for their dietary absence, and neither can any accessory synthesizing mechanisms, as, for example, the intestinal bacteria, fabricate the missing essentials rapidly enough to compensate for their dietary absence. Adult rats, whether protein depleted or normal, lose weight and appetite when fed rations adequate in calories, vitamins and minerals and containing all the essential amino acids except one. In other words, they manifest acute amino acid deficiency disease and are unable to correct the tissue deficiency by the "raiding" of other tissues in order to obtain a supply of essential amino acids. In the absence of a single essential amino acid, tissue synthesis comes to a standstill, as evidenced by the loss of weight in a mature animal and by the inability of a protein-depleted adult rat to regain lost weight or to fabricate plasma protein or hemoglobin. In the absence of any essential amino acid, therefore, all the others become largely useless for the purposes of tissue synthesis and, presumably, are either converted into glucose or are deaminated and excreted. In consequence, the synthesizing mechanisms, instead of fabricating imperfect tissue proteins, apparently discard all essential amino acids not immediately utilizable and wait until a complete assortment is again available before starting the synthesizing process. Evidence for this idea was furnished by Elman [6] in the following way: When an acid hydrolysate of casein, supplemented with tryptophane, was injected intravenously into a dog, good nitrogen retention occurred, whereas when the hydrolysate was injected, followed six hours later by injection of tryptophane, nitrogen retention did not occur. At that time Elman said: "The absence of one essential amino acid, i. e., tryptophane, at the time all the others are present in the blood and tissues prevents retention of nitrogen and presumably delays or even prevents synthesis of amino acids to protein." Cox and Mueller,[7] in commenting on this experiment in relation to their studies on the influence of protein hydrolysates on the regeneration of serum albumin, suggested that if for the establishment of nitrogen balance all essential amino acids must be present in the circulation at one time "it is not unlikely that differences in the rate of protein hydrolysis and in the rate of absorption of the amino acids from the gastrointestinal tract may greatly influence the effectiveness of a particular protein in serum albumin regeneration. That proteins are hydrolyzed at different rates and to different extents and that amino acids are readily freed from some protein linkages but that some form resistant groupings are well recognized facts. Further, it was shown that there are differences in the rate of absorption of the different amino acids. It follows that the composition of the amino acid mixture which may eventually appear in the blood may differ widely from the actual composition of the ingested protein. Therefore, in measuring the effect of an ingested protein by means of plasma albumin regeneration, one may be measuring not an intrinsic difference in proteins based on ultimate composition but the net resultant or varying rates of enzymic hydrolysis and absorption from the intestine."

AVAILABILITY OF ALL ESSENTIAL AMINO ACIDS

Additional support for this point of view is seen in the following experiments in which protein-depleted rats were offered rations in which the dietary nitrogen was supplied by various combinations of essential amino acids, ingested at varying periods. For example, a protein-depleted rat can recover lost weight rapidly when fed a basal ration supplemented with only the ten essential amino acids. Under such conditions the mixture of amino acids is ingested at one time and the amino acids, presumably, are almost simultaneously absorbed. Thus when they reach the synthesizing tissues they become immediately available as a group to the synthesizing mechanisms for the fabrication of tissue protein.

What happens, however, if these same essential amino acids are not made simultaneously available to the synthesizing mechanisms? Such a type of experiment would seem to afford an excellent opportunity to test the postulate that the essential amino acids must be simultaneously available to the synthesizing mechanisms if they are to be fabricated into complete tissue proteins. Co-workers and I have put this postulate to the experimental test in the following way: [8] A ration was compounded with the dietary nitrogen coming from a mixture of ten essential amino acids. Two other rations were similarly prepared except that one contained only five essential amino acids, arginine, histidine, leucine, lysine and threonine, and the other the second five, isoleucine, methionine, phenylalanine, tryptophane and valine. Each group of amino acids had an essentially identical nitrogen content, and the rations could be fed either simultaneously or alternately and at varying intervals. Thus, when the two incomplete amino acid rations were mixed in equal proportions and fed to protein-depleted rats, the animals ate well and recovered lost weight steadily. If,

6. Elman, R.: Time Factor in Retention of Nitrogen After Intravenous Injection of a Mixture of Amino Acids, Proc. Soc. Exper. Biol. & Med. **40**: 484-487, 1939.

7. Cox, W. M., Jr., and Mueller, A. J.: Serum Albumin Regeneration as Effected by Intravenously and Orally Administered Protein Hydrolysates, J. Clin. Investigation **23**: 875, 1944.

8. Cannon, P. R.; Steffee, C. H.; Frazier, L. E.; Rowley, D. A., and Stepto, R. C.: The Influence of Time of Ingestion of Essential Amino Acids upon Utilization in Tissue-Synthesis, Federation Proc. **6**: 390, 1947.

moreover, they were fed at alternating intervals, from one to eight hours apart, the rats accepted the rations well and convalesced rapidly. On the other hand, if the rats were fed the incomplete amino acid rations under similar conditions they quickly stopped eating and lost weight steadily. This happened even when the two incomplete amino acid rations were alternated at two hour intervals. In fact, if the two incomplete rations were placed in a single cage and the complete ration in another cage and the rats were allowed to eat ad libitum, those offered the complete ration gained weight steadily whereas those offered the incomplete rations either lost weight or were barely able to maintain it.

It would seem from these experiments that an animal cannot eat the two sets of incomplete rations quickly enough in relation one to another to enable the second group of essential amino acids to combine with the first group in the synthesizing mechanisms in order to accomplish tissue synthesis. These experiments present challenging evidence, therefore, that for the purposes of tissue synthesis, all the essential amino acids must be available at approximately the same time. Evidently when one group of five amino acids has been absorbed, the individual amino acids are not stored in the liver or elsewhere for much longer than an hour in order that they can combine with the second group and thus be built up into protein molecules. These facts substantiate the concept that the utilization of amino acids for tissue fabrication is extremely rapid. The experiments suggest, moreover, that for optimal utilization of amino acids in tissue synthesis, each meal should be well balanced with respect to its content and relative proportions of essential amino acids.

Melnick and colleagues [9] have suggested, also, that the unequal rate of enzymic digestion of some vegetable proteins—soy protein, for example—accompanied, in consequence, by an unequal rate of absorption of the essential amino acids resulting from this digestion, might well explain the fact that these proteins have a generally poorer nutritive value than do animal proteins. Our experiments would tend to strengthen this postulate. Moreover, our findings reemphasize the importance of the high quality proteins in tissue synthesis, because of their easy digestibility as well as their rich content, and of all the essential amino acids in the right proportions.

These facts emphasize further certain theoretic advantages of protein hydrolysates and protein concentrates in surgical practice. Assuming that these preparations contain all the essential amino acids in adequate amounts and proportions one to another, their administration should insure delivery to the synthesizing tissues, practically simultaneously, of all the essential building stones of protein. Complete utilization of these amino acids, however, still depends on the efficiency of the synthesizing mechanisms. If the synthesizing cells have free access to an available supply of energy, vitamins and necessary minerals, and if they have not been injured by "conditioning factors," conditions should be optimal for the effective utilization of the amino acids and their consequent conversion into tissue protein. This does not imply, however, that high quality natural protein should not be fed, whenever possible, particularly for reasons of palatability and economy.

9. Melnick, D.; Oser, B. L., and Weiss, S.: Rate of Enzymic Digestion of Proteins as a Factor in Nutrition, Science **103**: 326-329, 1946.

ABSTRACT OF DISCUSSION

DR. ROBERT ELMAN, St. Louis: To say that the preoperative and postoperative protein needs can be met by giving the patient a beef steak, eggs or a glass of milk is an oversimplification of the problem even when there is no vomiting at all. Several of these problems have been studied by Dr. Cannon and clearly explained by him. I should like to comment on his finding that although retention of protein requires adequate calories, there is no greater protein synthesis when the caloric intake is increased beyond 70 per cent of the standard. With an adequate protein intake, 1,100 calories will thus permit as much protein synthesis as 1,600. This is important from the practical point of view, because normally the caloric component of the diet occupies 80 to 85 per cent of its bulk, and surgical patients cannot always eat a full, well balanced meal. When patients require intravenous feeding we should especially like to know how little is necessary. From Dr. Cannon's findings some of the standard caloric needs may be sacrificed for short periods without impairing protein tissue synthesis. We know that tissue protein cannot be made from carbohydrate or fat. Nevertheless, there is still a widespread belief that all we need to provide nutritionally is calories and vitamins, that protein will take care of itself and is of secondary importance anyway, and perhaps even a little harmful. The basic truth is that all dietary elements are needed, but there is one fundamental difference: Nothing can be substituted for protein or amino acids, whereas calories may come from protein as well as from carbohydrates and fat. Moreover, there is only one dispensable store of food in the body; that is, adipose tissue. The second practical inference which I should like to draw from Dr. Cannon's findings is the fact that even if the patient does drink his glass of milk, eat his steak or eggs, it does not mean that tissue protein will be manufactured therefrom. Even if digestion occurs, absorption may not be prompt, and the various amino acids may arrive in the tissues at different times and be deaminized and lost. In this way their value as food becomes one of yielding calories but not of building tissue protein. It is my impression that certain surgical patients do not digest or absorb whole protein normally. For such patients, hydrolyzed protein administered by mouth or parenterally will be necessary to assure full utilization.

DR. PAUL R. CANNON, Chicago: I omitted the remarks dealing with calories in order to conserve time. I agree completely with Dr. Elman in regard to overemphasis on calories. We have done two types of experiments to get at this problem of calories. Our standard ration for convalescence contains 48 calories, and supplies 1.35 Gm. of high quality protein per day. When a protein-deficient animal eats this ration, he makes a straight line recovery such as I described. As we start cutting down the calories, with the animal continuing to eat 1.35 Gm. of high quality protein per day, when we get to a caloric intake approximately 70 per cent of the original, the animal begins to lag with respect to weight recovery. From that point of view, therefore, calories are certainly essential for tissue synthesis. If, on the other hand, we reverse the procedure and lower the protein intake for groups of animals, while keeping the caloric intake at 48 or even 60 calories per day, the extent of convalescence varies directly with the protein intake, regardless of calories. It is obvious that both calories and protein are essential for effective tissue synthesis—but a high calory diet is no substitute for ingestion or injection of all the essential amino acids. That has been shown clinically, also, and I have cited in the paper experiments of Mulholland in the healing of decubitus ulcers which point in the same direction. I suspect, however, that tissue synthesis can proceed with fewer calories than we are accustomed to think are necessary, provided that there is an adequate amount of high quality protein. My associate, Dr. Earl Benedict, is making studies in that respect, both in animals and in man, and has found that if one considers the problem of calories per day, it is probable that 2,000 calories per day in an adult man may furnish enough energy for maintenance as well as for purposes of tissue synthesis. This suggests that, if other dietary essentials, and particularly enough high quality protein are supplied at the same time, effective tissue synthesis is still possible, provided that the synthesizing mechanisms are not impaired.

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NEW ANTIBIOTIC AGENTS

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I should like at the outset to thank the American Medical Association for the great honor which they have done me in asking me to address the meeting today and for their kind hospitality on this memorable occasion of the celebration of the Centenary of the Association. Centenary celebrations are usually a time for casting the mind back to see what has and what has not been accomplished during the preceding years. I thought today that it might be of some interest to cast our thoughts back briefly and then to examine the present situation with regard to the search for antibiotics which may have therapeutic importance.

In the matter of antibotics it is not necessary to go back very far. It is, I think, becoming more generally recognized by the members of the medical profession that the phenomenon of antibiosis has been known for a very considerable time and that much work has been put into studying it during the last seventy years, but it is only since 1939 that a combination of good biochemistry with other forms of biologic investigation has been applied to the problem of antibiotics. It was in 1939 that Dubos detected that Bacillus brevis produced a powerful antibacterial substance, now known as tyrothricin, which he studied with Hotchkiss in a comprehensive fashion not only from a chemical and bacteriologic point of view but also from that of its possible use in clinical medicine. It was unfortunate that this interesting substance, which had been worked on from so many angles, should turn out to be very toxic when given into the blood stream of animals, so that its use in man has been limited to external application. Only a year later, however, it was demonstrated that penicillin had such low toxicity and other desirable properties that it was in the class of systemic chemotherapeutic agents. As soon as this point became thoroughly recognized a flood of investigation started. I am sorry to say that my colleagues and I have had the task of reading the mass of literature which has already accumulated. Its huge volume has been one of the most unpleasant things about penicillin, but a perusal of it does show that this substance has been investigated with great skill in the laboratory, from the chemical as well as the biologic point of view. We now have an extensive knowledge of the behavior in the animal body not only of "penicillin," but of some of the individual penicillins which are now becoming recognized in increasing numbers. I need not tell you about clinical investigation; I have no doubt that you have all used the material and are familiar with the work which has led up to its widespread use today.

One of the most remarkable developments of recent years has been the transformation from working on a laboratory scale, in which the drug was made in individual vessels holding a few hundred cubic centimeters, up to the gigantic plants which now produce the material in enormous quantities. In this work the United States has played a predominant part thanks to your admirably trained technicians, biologists, engineers and chemists. But for their activities the work of the laboratories could not possibly have been translated into clinical terms.

Read in the General Scientific Meetings at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 10, 1947.

DESIRABLE PROPERTIES IN AN ANTIBIOTIC FOR MEDICAL USE

The accumulated experience from this vast amount of work on penicillin enables us to formulate some of the properties which it is desirable that an antibiotic should have, if it is to be used as a systemic chemotherapeutic agent.

1. It must have a powerful action against at any rate some bacteria. It is improbable that any of the weaker antibiotics, of which there are many, will find a place as chemotherapeutic agents.

2. It must have specificity of action. From a study of bacteria affected has emerged the fact that the antibiotics possess in many instances remarkable specificity of action. They may have no action whatever against certain species, and yet be powerfully active against others. At one time we had the idea that any substance which would act against both gram-positive and gram-negative organisms—that is, a substance without any great specificity of action as between one bacterial species and another—would in all probability be toxic to animal cells. This we now know not to be a completely valid generalization. Nevertheless, all the antibiotics so far investigated which have any prospect of being used in medicine have specific action.

3. A substance must possess little toxicity to the intact animal body, and the less of this the better. Not only must it lack toxicity to the intact body but also to individual cells such as the leukocytes. It must not damage the kidneys if it is excreted and possibly concentrated by them, and its toxicity must not only be low following a single dose but it must not cause any changes in the body when given in frequent doses for a considerable length of time.

4. A substance must be active in the presence of body fluids such as serum, pus and cerebrospinal fluid; substances very active in the test tube may be completely inactive in the body because of the inhibitory effect of body fluids.

5. The chemotherapeutic agent must not be destroyed by tissue enzymes. An indication of likely behavior in this respect is obtained by the reaction to trypsin. I think that it is improbable that any substance which is destroyed by tissue enzymes or by trypsin will survive for long after injection into the blood stream; it will probably be destroyed rapidly and with it any possibility of its exerting antibacterial action. Though it is not essential, it is highly desirable that the drug should be absorbed from the gastrointestinal tract, so that it can be taken by mouth.

6. It should be stable. Penicillin has caused a great deal of trouble through its instability. Many of the difficulties in the early days of penicillin would have been avoided but for its particular liability to destruction.

7. It is also desirable that it should not be too rapidly excreted by the kidneys. Penicillin has this great disadvantage; because it is excreted by the tubules it leaves the body with great rapidity.

8. Another property which we have come to recognize as being serious is the capacity to produce in infecting bacteria a resistance to the chemotherapeutic drug itself. This was first noted with the sulfonamide compounds, for bacteria can become resistant to the sulfonamide drugs both in vitro and in vivo. It was also shown that bacteria became resistant to peni-

cillin in vitro, and this is especially true of the Staphylococcus. Fortunately it appears to be much more difficult to acquire resistance to penicillin in vivo than in vitro, but the induction of resistance even in vivo is a marked property of streptomycin and no doubt will seriously interfere with its therapeutic use. It would appear that bacteria can rapidly acquire resistance to many other of the antibiotics of which we know.

SOURCES OF ANTIBIOTICS

In a search for antibiotics which may be of use in clinical medicine, that is for substances possessing some of the biological properties which I have just mentioned, surveys of enormous numbers of organisms, fungi, actinomycetes and bacteria, have been made.

Fungi.—There are now several hundreds of fungi known to produce antibacterial substances. These species and strains are now being worked on in various countries, and the list of substances which have been extracted in a highly purified or crystalline form increases almost daily. In these lists I have put, so far as I know, all the substances which have as yet been isolated from fungi. The following substances are produced by fungi imperfecti and Ascomycetes:

Expansine	Puberulonic acid
Penicillic acid	Gladiolic acid
Kojic acid	Griseofulvin
Mycophenolic acid	Ustin and 4 other compounds
Gentisyl alcohol	Aspergillic acid and similar substances
Fumigatin	Gliotoxin
Spinulosin	Helvolic acid (fumigacin)
Citrinin	Terreic acid
Javanicin	Glutinosin
Lateritin-I	Viridin
Lateritin-II	Tardin
Avenacein	Mycocidin
Fructigenin	Notalysin
Sambucinin	Chaetomin
Puberulic acid	Miscellaneous antibiotics from Aspergillus species and a Penicillium

Of all this list only one besides penicillin, namely helvolic acid, or fumigacin as it is called in this country, even approaches being a chemotherapeutic agent. Helvolic acid has many desirable properties; it is not very toxic, is active in the presence of body fluids, not destroyed by tissue enzymes, is absorbed from the gastrointestinal canal, is stable and is active against a range of bacteria. But bacteria acquire resistance to it with great ease, and although it has been possible to confer some degree of protection to mice experimentally infected with streptococci and staphylococci, it is not 100 per cent effective. The precise reasons for this are not known, but they may be associated with the fact that helvolic acid is an almost exclusively bacteriostatic substance and does not kill the organisms, so that the protection of the animal body falls much on its own natural defences, in particular the leukocytes.

I should like to call your attention to the Basidiomycetes and invite you to admire some of the names the substances derive from their species of origin:

Hirsutic acid	Ramealin
Nudic acid A and B	Pycacic acid
Oregonensin	Polyporin
Clitocybine	Polystictin
Nebularine	Sparassol

It is interesting that there are said to be thirty thousand species of Basidiomycetes, several hundred of which, at least, produce antibiotics. The substances listed are, as far as I am aware, the only ones which up to the present have been isolated. None of them show any promise whatever of being of use in medicine; they are for the most part far too toxic, and some of them also are relatively inactive. From a strictly medical point of view, the examination of the fungi must be said to have been in general disappointing.

Actinomycetes.—Another group of organisms, the Actinomycetes, has produced better results:

Actinomycetin	Grisein
Actinomycin	Streptin
Streptothricin	Nocardin
Streptomycin	Micromonosporin
Proactinomycin	Mycetin
Actidione	Litmocidin

Just as I do not propose to say much about penicillin, I do not propose to say anything here about streptomycin, for I know nothing more about it than I have read in the literature, but I should like to make a remark or two on other substances.

Streptothricin is an interesting substance, extracted by Dr. Waksman and his colleagues, which in animals can be shown to have systemic chemotherapeutic properties against certain susceptible bacteria. Its use in man, however, is contraindicated from the fact that in animals it produces late delayed severe toxic reactions, the prospect of the production of which could not possibly be tolerated in man.

Proactinomycin, a substance which was extracted from an accidental laboratory contaminant in Oxford, is another substance from this group of organisms which is on the verge of being a systemic chemotherapeutic agent. Its range of activity is similar to that of penicillin; it is less potent and more toxic, and will confer only a certain degree of protection on animals infected with susceptible organisms. It does not quite make the grade, but it is another example from among the relatively few substances known from this group which, but for the existence of better substances, would likely have been tried in medicine.

Of the other substances in this list, grisein, actidione, litmocidin, streptin, mycetin, we know relatively little, as they have only recently been described. It would be impossible to say whether they will have a use in medicine, but from the descriptions in the literature this appears to be improbable.

You will see that of the relatively few substances that have been isolated or detected among the actinomycetes, at least three possess systemic chemotherapeutic properties.

Bacteria.—Much interest is being displayed at the present time in bacteria as a possible source of antibiotics useful in medicine. As yet the most important group is that of the aerobic spore-forming organisms, the large genus Bacillus.

Bacillus: From this group the following substances have been extracted:

Tyrothricin: gramicidin	Bacitracin
tyrocidine	Bacillin
Gramicidin S	Licheniformin
Subtilin	Eumycin
Endosubtilysin	Colistatin

Tyrothricin and its two components are well known and have been extensively tried in the clinic. The others are all of relatively recent origin, and knowledge of them is still far from complete. Nevertheless, it is possible to say that bacitracin and licheniformin are substances which, on the published evidence, are different from one another, but both of which are capable of protecting animals infected with such bacteria as the

Streptococcus, Pneumococcus, Bacillus anthracis and Staphylococcus. They are true systemic chemotherapeutic agents since, when injected subcutaneously, they operate on an infection which has been induced intraperitoneally.

Another substance, subtilin, which appears to be of a somewhat different nature, in that it is described as being destroyed by trypsin, appears to be able to protect animals against infection by anthrax bacilli and pneumococci, but in the experiments so far described this antibiotic has been injected into the peritoneal cavity where the infecting bacteria had previously been placed, so that it cannot be considered a true systemic chemotherapeutic agent, though of course it may find a use in medicine as a local application in the same way as tyrothricin.

About the others we know relatively little. None has actually been prepared in a pure form, and so one cannot identify them for certain by chemical means, but colistatin and bacillin are different from the others in that they affect such organisms as Escherichia coli. There can be little doubt that many other antibiotic substances are produced by this group of bacteria. Whether they will have properties which will make them into true chemotherapeutic agents useful in the treatment of human disease it is too early to say, but this certainly looks to be a group with prospects.

Pseudomonas pyocyanea: Other bacteria such as Pseudomonas pyocyanea are being investigated. You have all heard of the use of pyocyanase, an extract from this organism, at the beginning of this century, and recently a number of substances with antibacterial action have been extracted in this country, particularly four "pyo" compounds which are interesting but appear to be too toxic for use in medicine. From Sweden comes pyolipic acid, which also does not appear to have a use in medicine.

Induced Antibiotics: Theorell, Davide and Bergström have been working to see whether it is possible to induce one micro-organism to produce an antibiotic substance against another micro-organism when they are grown in close association. This question of induced antagonism in contradistinction to the usual antibiosis, or natural antagonism, was investigated in the 1920's by Schiller, who went so far as to say that it was possible to induce yeasts, for example, to produce substances antagonistic to the tubercle bacillus and that this offered chemotherapeutic possibilities. It has never been clearly shown that the phenomenon of induced antagonism does, in fact, exist, but it is an interesting idea and it is clearly well worth considerable investigation, for, if it should be found that some organisms can be made to produce antibiotics by suitable cultural conditions, then it may be, as Schiller first suggested, possible to produce antibiotics against desired organisms. I should like to emphasize, however, that the evidence for this being possible is very slight at present.

Other Bacteria: Antibiotics are also described as being produced by such familiar organisms as Esch. coli, Streptococcus, Bacillus cremoris and Staphylococcus. Relatively little is known about these substances. Numerous bacteria derived from such places as soil and sewage possess antibiotic powers, but as yet no substances from them have been extracted or examined. It is quite possible that further research among antagonistic bacteria will demonstrate potential therapeutic weapons.

The empiric method of approach to the antibiotic substances produced by fungi and bacteria has thus led to the extraction already of a number of substances of considerable interest to medicine. The process is something like taking a ticket in the lottery—it is quite possible that there are some tickets with prizes still. But over and above this direct search for antibiotics useful in medicine bonuses are accruing which may be of the greatest use in the future. It is fair to say that the employment of modern chemotherapeutic agents necessitates a good knowledge of bacteriology by the practitioner of medicine, and I think that modern therapeutics has brought nearer together the sciences of bacteriology and of practical medicine. And in addition every study of the action of an antibiotic throws some light on the life processes of bacteria. You will appreciate, therefore, that in the long run—though it may be a very long run—it is possible that the most profitable discoveries will be those made in connection with the mode of action of antibiotics on bacteria. It is already clear that there are numerous ways of attacking bacteria so that they die, or at least are restrained from multiplying. There seems to be no significant cross resistance between the various antibiotics. By this I mean that a penicillin-resistant staphylococcus may be rather sensitive to—shall we say—helvolic acid, or to many other antibacterial substances. A bacterium resistant to helvolic acid may be sensitive to proactinomycin, and so on. The most striking example of specificity is that shown among Esch. coli, for some strains of this species produce substances which inhibit the growth of certain other strains of Esch. coli but not of all. Not only one but several substances with this property are produced. As yet little real progress has been made in the understanding of the biochemical mechanisms involved in this remarkable specificity, or indeed in the mode of action of any of the natural antibacterial substances, not excluding penicillin. It is a field in which it is extremely difficult to see the next steps, but once a start has been made we may confidently expect results of the greatest importance to flow from these studies. So many tools in the shape of antibiotics are now available that we can only hope that someone will have the idea which will enable them to be employed successfully.

From this brief survey you will appreciate that much work is being done in the extraction and examination of naturally occurring antibiotics. It is slow work; in many instances cultural conditions are difficult; in others chemical extraction is difficult and laborious, and in yet others biologic examinations are not altogether straightforward. Still, a steady accumulation of data is growing, and I think that within a relatively few years we should have at least a broad pattern of the types of substance which are produced by micro-organisms. From among these I think on present evidence it is safe to say that further antibiotics will be found which will find a place in medicine. Again, the evidence is that they will be few, as most of those so far investigated are very toxic to animal tissues or have other disadvantages. Whatever happens, however, those who are engaged in this work will be contributing to the sum total of knowledge, and if medicine benefits from it so much the better.

PSYCHIATRIC ASPECTS OF PHYSICAL MEDICINE

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Physical medicine, and in particular physical and occupational therapy, have a well established role in the treatment of psychiatric disorders. We can trace the origin of physical treatment of mental disease to our earliest records. The methods used then were certainly physical but perhaps were not strictly medical, as they included immersion, manipulation and beating to drive out evil spirits. Hydrotherapeutic measures can boast of a long historic background and still comprise an essential feature of treatment of the psychotic patient in all adequate hospitals.

The rationale for the use of water in various forms is frequently based on empiricism but has stood the test of many years of clinical experience with some objective benefit to the patient. The two measures most universally employed are the continuous tub at neutral temperatures and the cold and neutral wet sheet pack. These forms of treatment have been found to be most advantageous in caring for those patients with the most violent behavior. The management of this type of patient is so difficult that the use of these agents is justified purely from a point of view of safety to the patient and to others. There is a considerable body of literature, however, dealing with physiologic changes associated with immersion in water at various temperatures and other common hydrotherapeutic procedures. These studies by and large are concerned with changes in circulation of the skin and subcutaneous tissues and readily observable cardiovascular responses. Several textbooks have appeared explaining in detail changes in color of the skin, temperature, heart rate and muscular efficiency.[1] Observations are also related on the sedative effects of these measures, as measured by the improvement in behavior of the patient, and on the reduction in use of sedative drugs and of physical restraints. The metabolic requirements of the patient are also more easily met while he is receiving this type of therapy. In spite of the thousands of patients who receive hydrotherapy in mental hospitals throughout the world, there is surprisingly little information concerning its effect on the central nervous system, endocrine function and the psychologic aspects of the psychoses.

MASSAGE

Various types of massage having tonic and sedative effects on the circulation and probably reflexly on the nervous system are used in the treatment of psychiatric patients, but to a lesser extent than the hydrotherapeutic measures. Again observations of changes in circulation have been recorded, but there is still little systematic study of the psychologic effects of such treatment, particularly on patients with various forms of psychiatric disorders.

EXERCISE

The importance of encouraging activity in a large variety of psychiatric disorders, excluding those in which hyperactivity is a symptom, has received more and more attention lately. In the past, largely from the influence of Weir Mitchell, rest was considered a dominant factor in the cure of various psychoneurotic complaints. During the past war, however, bed rest was closely examined as to its usefulness and possible hazards in all medical, surgical and psychiatric patients. Many authors have stressed the detrimental effect of inactivity on bone, muscles, joints and circulation, and have also intimated possible harmful psychologic stagnation.

To counteract this, programs of guided muscular activity in the form of convalescent exercises or reconditioning have been organized in many service hospitals during the war and to an even larger extent in veterans' hospitals at the present time. Evidence is accumulating which shows that many mute and uncooperative patients may be led to the road of recovery through the stimulus of group exercises and sports.

Other patients, of course, need no encouragement to activity but have to be shown how to relax the neuromuscular apparatus. Special technics have been devised which are effective in producing scientific relaxation which have a field of usefulness in a large variety of medical and psychiatric conditions.

OCCUPATIONAL THERAPY

Occupational therapy has not had general acceptance in the treatment of psychiatric disease for as long as physical therapy, but it is now well established in all our best hospitals. This type of treatment should not be considered simply one of recreation or diversion, but should be integrated with the psychiatric treatment to aid in drawing the patient away from his abnormal interest in his own problems and directing him toward purposeful activities. Patients can be led into group activities by this technic. Feelings of insecurity and inadequacy are often overcome. Likewise aggressive tendencies may be sublimated in various forms of work under the guidance of the occupational therapeutist.

Many of the procedures described operate in patients by bringing about physiologic reactions which have therapeutic value. Other procedures such as those used in occupational therapy attempt to change the social adjustment and the attitudes of the patient. Recent advances in psychiatry have emphasized the importance of interpersonal relationship between the physician and the patient. The broader understanding of these factors, we feel, has direct bearing on the work of physical therapeutists and hence merits consideration. Further, accumulating evidence indicates that the procedures used may have some special and personal meaning to the patient. In order to do effective work the physical therapeutist must be aware of these factors. The benefits which can be derived from the procedures in physical medicine, one finds, are often dissipated and lost because sufficient attention has not been paid to the role of the therapeutist in developing and utilizing the interpersonal relationship. The therapeutist, being primarily oriented to the physiologic effects of procedures, may overlook their personal and psychologic meaning. A consideration of these factors, even though their operation is not well understood at present, might be worth while.

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From the Departments of Physical Medicine and Psychiatry of the Massachusetts General Hospital and the Departments of Medicine and Neurology and Psychiatry of the Harvard Medical School. These studies were aided by a grant from the Baruch Committee on Physical Medicine.

1. Baruch, S.: Principles and Practice of Hydrotherapy, New York, William Wood & Company, 1898. Wright, R.: Hydrotherapy in Psychiatric Hospitals, Boston, Tudor Press, Inc., 1940. Kellogg, J. H.: Rational Hydrotherapy, Battle Creek, Mich., Modern Medicine Publishing Co., 1928.

PHYSICIAN-PATIENT RELATIONSHIP

To Freud goes the credit for having first investigated the phenomenon of transference and its far-reaching implications in human motives and performance. This contribution has made us aware of the subtle but powerful forces operating in the contact between the physician and the patient. Whether the physician is aware of it or not, he participates with the patient in a joint experience. Treatment of any kind is in reality a venture undertaken by the physician and the patient for the purpose of alleviating the patient's illness and restoring him to health. To this task the physician brings his expert knowledge, his technical skills and his general experience in handling patients. Often the latter turns out to be the most potent agent in his therapy. This is especially true in the chronic illnesses or in illnesses in which the causation is unknown and the treatment is nonspecific. Even when specific treatment is available, the physician's skill in evoking and utilizing the relationship factors may be of vital significance. Insulin is of no help to a patient with diabetes if the patient refuses to take it. A well balanced diet is of no avail in building up a patient who cannot eat because of hysterical vomiting, and muscles cannot be strengthened if the patient is unwilling or unable to undertake active exercise.

The average patient on coming to the physician brings a desire to get well. This in the person who is well adjusted is obvious. The physician utilizes this in a rational manner and in most instances pays little attention to the personality factors in the patient. The physician or therapeutist assumes that the patient operates rationally and is able not only to talk sense but to behave in a realistic and purposeful manner. In most instances this is true and the assumption is a safe one. However, the patient may bring other action patterns to this situation which jar the smoothness of the relationship. He may bring a dislike of physicians or have ideas that he should be able to escape physicians and medicines. Seeing a physician may represent a defeat of the first magnitude to a person who has been self sufficient. More frequently, seeing the physician releases strong tendencies for dependency. Many patients describe a reasonable attitude toward the physician, and yet behave as though he were a modern magician. They expect him to know all, to be able to cure all and to have infinite wisdom, patience and understanding.

The patient's need for dependency tends to be encouraged by the physician's zeal to be helpful. The physician wishes to relieve the patient of his symptoms and may succeed only in bringing out latent tendencies of dependence and immaturity. He may wish to take over and direct the life of the patient until improvement occurs, but may find that the patient does not allow him to terminate treatment. More important than all of these, the physician may not realize that he has allowed his own personal patterns of social behavior to determine his procedures with a patient, rather than the needs of the patient and the strict medical indications.

The physiatrist is especially prone to some of these pitfalls. First of all his patients as a rule have chronic illnesses for which at present no specific remedies or treatment exist. The patient comes back repeatedly for treatment and this opens the door for a sustaining type of relationship. Treatments take time and during this time the patient asks questions which he wants answered. The patient chats along about personal matters, and this encourages the therapeutist to participate. Further, the therapeutist manipulates the patient by using his hands, and massaging may have personal and even erotic meanings to patients. Unless the therapeutist is aware of the personal implications of his skills and is ever alert to the ways in which patients relate themselves to him, he may defeat his own purpose and fail to bring to the patient the relief and therapeutic help which his training and experience make him eminently capable of administering.

The special relationship of the physician differs in many respects from the conventional social contact. It has a purpose, mainly to solve a problem and to help or alleviate the symptoms and maladjustment of the patient, and is to be terminated when its purpose is achieved. It envisages a future in the relationship only so far as that helps achieve the purpose. It does not necessarily imply a free and easy give and take during the treatment. Its sole justification is its therapeutic efficiency.

We may now consider the type of relationship which we should like to achieve with a patient. The physical therapeutist wishes to develop the type of relationship with his patient which allows the patient to return for treatment and which also allows the treatment to be terminated when indicated. He wishes to have an adult professional relationship with the patient and not allow it to become purely social. He prefers it to be one in which the patient considers the physician a rational person and not a magician, in which the patient cooperates with the physician and assumes initiative in following the directions of the physician. He discourages the patient from becoming dependent or directing his own case. All procedures which further these goals are to be encouraged and all those which interfere are to be avoided. Each experienced therapeutist has his own devices for attaining these ends, but even the most experienced worker has certain idiosyncrasies which are not helpful. We have had the opportunity of scrutinizing the behavior of the physician to see in what ways his behavior helps or blocks the attainment of the therapeutic goals. We have found consideration of the following principles and procedures most helpful in developing the appropriate physician-patient relationship. The following procedures are neither all-inclusive nor imperative. They are suggestions based on our experience and are offered as guides for orientation rather than as laws.

1. *Goals.*—It is helpful if the therapeutist can always keep the over-all goal, the purpose of the treatment, and the immediate goal, the daily procedures, in mind and weigh everything which he does in terms of whether it helps or hinders the achievement of the goal. This holds for physical procedures used as well as for the type of conversation which one has with a patient during treatment. As the treatment proceeds the goal may vary, but the physician should always be aware of the goal and how far along he is in attaining it.

2. *Direction.*—The physician decides on the type of procedure and continues using it until he is satisfied that it is no longer necessary or helpful. Shifts in the procedure are decided by the physician, not by the patient. Even though the physician directs the case, he wishes to have the patient assume as much initiative as possible. Practically speaking, we prefer not to prolong passive procedures such as massage and hydrotherapy, but to have the patient take up exercises and more active procedures such as occupational therapy as soon as possible. In planning occupational therapy we encourage the patient to work independently as

soon as possible. The role of the therapeutist is to remain in the background, presenting opportunities for the patient to plan the work and carry it out on his own as soon as possible. Often at the beginning of treatment the direction must be more active, but even in these cases the plan calls for ever increasing initiative and responsibility on the part of the patient. We wish to treat patients as independent adults. We rarely tell the patient that we are in control of the situation; we merely control it with minimal activity on the part of the therapeutist, encouraging the maximal activity on the part of the patient.

3. *Care About Physical Intimacies.*—We are extremely careful in avoiding physical intimacies such as touching, patting the patient, holding hands or nudging. These suggest the social situation and tend to change the professional relationship. In massage and other procedures physical contact with the patient is unavoidable. It is best to do all these procedures in the formal official setting and to routinize them as much as possible. Care in draping patients and the presence of a chaperon do a great deal in relieving the embarrassment of the patient and of the less experienced therapeutist. Security and confidence that come with experience allow the therapeutist to carry out procedures smoothly and deftly and are important in keeping the relationship on a strictly professional basis.

4. *Talking About Oneself.*—Discussing oneself, one's ideas about illness and its ramifications, as a rule does not further the goal. It may give the physician satisfaction, but usually does not help the patient. If matters must be discussed with patients, the further the topics are removed from medicine and therapy, the better. The physician's discussion of himself and his interests represents active participation of a nonprofessional kind. In most instances discussion of this kind can be avoided.

5. *Probing for Information.*—Avoid probing for personality difficulties in patients unless your goal is psychiatric treatment. As patients talk along during the course of treatment we listen interestedly to the personal topics brought up. We show no special curiosity in any particular topic and we take no positive steps in exploring for further productions. Unless the therapeutist is careful, he may unwittingly make a remark or ask a question to which the patient responds with a flood of material and overwhelming feelings. Unless one can utilize this for purposes of developing a professional relationship or giving the patient a better understanding of himself, we feel that procedures which lead to these reactions on the part of the patient had best be avoided. By the same token we avoid arguing with patients or getting into involved controversial discussions. One can never predict what effect such discussions have in straining the physician-patient relationship.

6. *Telling the Truth.*—We believe it wisest always to tell the patient the truth. This does not necessarily imply telling the whole truth. Nothing undermines the physician-patient relationship so effectively as telling the patient lies. If it is necessary to answer and we do not know the answer, we say so. The therapeutist often feels that he will lose caste with the patient unless he knows all the answers. Often the therapeutist feels that it is his responsibility to tell the patient all that is known in medicine about the patient's condition, and as a result many therapeutists give patients brief informal talks on physiology, psychology and human behavior in general. It is our impression that this does not help the patient and further suggests ideas and theories to the patient which may confuse the patient and give him another area for preoccupation. It is not necessary in most cases that the physician be omniscient in order to be effective. It is the responsibility of the diagnostician to orient the patient sufficiently to prepare him to accept the treatment indicated. If this has not been done by the referring physician, it may become the responsibility of the physiatrist. We would tell a patient, "Your back pain may be related to certain personal problems." We would avoid giving a talk about the distribution of sensory fibers in the nervous system as well as a dissertation on emotions and pain.

7. *Promises.*—Avoid making promises unless you are sure that they can be kept. This holds for all promises, especially promising the patient that we will cure him or when the cure will take place. If we are reasonably sure that a cure can be effected, we do not mind telling this to a patient. If we cannot be sure we hesitate to make any statements in the nature of predictions or promises. Patients take seriously the promises of the therapeutist and feel frustrated if the physician's statements are not borne out. When this occurs the patient loses confidence in the physician, which in turn may affect the relationship adversely.

8. *Praising and Encouraging Patients.*—When treatments are prolonged and results dubious there is pressure put on the physician to reassure the patient. The patient is often praised by the therapeutist with the best of intentions and good will. Sometimes, however, the therapeutist praises the patient to relieve his own insecurity or because he does not know what else to do. Praising a patient occasionally for persisting or for completing a rigorous course of treatment may be in order. There is a real danger, however, that the patient may become dependent on the praise of the physician and may become disturbed when praise is not forthcoming. This tends to divert the patient's interest from the rationale of the procedures and overemphasizes the relationship factors. It is, of course, useful to demonstrate improvement to a patient, especially during the course of a long program of treatment. This can be done best by showing the patient the objective changes in measurements due to his efforts, and thus stimulate and encourage him toward further activity. It also has the value of implied reassurance. Flattery, we feel, is superfluous in any physician-patient relationship. We avoid flattering patients and do not respond when patients flatter us. We prefer to have our relationship with a patient characterized by attitudes of earnestness, honesty and cooperation in working toward alleviating the patient's suffering.

RESEARCH

The foregoing suggestions as to the behavior of the therapeutist with the patient are based on our general experience with psychiatric patients.[2] We have attempted to apply this experience to the procedures of the physiatrist in his work. In order to test out the validity of these suggestions much research is needed in the combined fields of physical medicine and psychiatry. Yet this is not the only area in which joint research by members of these specialties would be profitable. There is need for more quantitative measurements of the physiologic factors in psychiatric conditions, especially those in which physiatrists have been working. An example of such research is found in current

2. Finesinger, J. E.: Psychiatric Interviewing, Am. J. Psychiat., to be published.

studies on cardiovascular, biochemical and neuromuscular efficiency in psychoneurotic patients whose major complaint is fatigue.[3] We have found in these same patients that symptoms are related to specific emotional situations.[3] These investigations have also suggested that important endocrinologic changes as reflected by the circulating lymphocytes occur when the patients are subjected to situations of stress induced by physical, chemical and psychologic stimuli.[4] We feel that there is a fruitful field for much future research into the psychiatric aspects of physical medicine.

SUMMARY

Many procedures in physical medicine are used in treating psychiatric conditions. In addition to the recognized physiologic effects there are psychologic relationships which can be of therapeutic value. The factors enabling the physician best to utilize this relationship are discussed, and suggestions to guide the physician's behavior are offered. Combined research in the fields of psychiatry and physical medicine is necessary to form a basis for rational treatment.

COMBINED STREPTOMYCIN AND SULFADIAZINE TREATMENT IN BRUCELLOSIS

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In the past decade, many diseases of bacterial origin have yielded dramatically to the newer chemotherapeutic and antibiotic agents. Brucellosis has not been one of them. Of the scores of remedies that have been offered for this disease with more or less enthusiasm, none have proved satisfactory under critical evaluation and most of them have been discarded. In the early days of the sulfonamide compounds and of streptomycin, enthusiasm for their efficacy in brucellosis ran high, but further experience has demonstrated that their therapeutic value is minimal.[1]

Both sulfadiazine and streptomycin suppress Brucella in vitro. Although neither drug by itself is distinctly effective clinically, there is evidence that even in vivo each has some suppressive action on Brucella. These considerations led us to evaluate the effect of the simultaneous use of these drugs in a case of human brucellosis.

REPORT OF A CASE

A Transylvania-born white man, aged 52 years, was admitted to Albert Merritt Billings Hospital on March 9, 1946. He had been in good health until eight months before—in July 1945—when he began to have daily attacks of chills, chilliness, fever and dizziness in the late afternoon, which increased in severity for several months.

This patient had been a city dweller all his life except for a period of one year during which he operated and lived on a farm. During this year, many of his cattle aborted and he frequently assisted at the premature delivery of the calves. On March 1, 1945, more than four months before the onset of his illness, he sold the farm, returned to the city and resumed his former occupation as an apartment house janitor. During this interval prior to the onset of symptoms, a source of exposure to Brucella could not be elicited. The incubation period then would appear to be longer than four months.

In October, about three months after the onset of illness, the temperature became higher and a sharp, nonradiating epigastric pain developed. In December he became acutely ill and was admitted to another hospital, where eventually a diagnosis of undulant fever was made. The attending physician provided us with the following information. Although the patient presented the general picture of acute septicemia and was severely ill, the only positive physical finding was tenderness in the right upper quadrant. On two occasions, Brucella agglutination tests elicited positive reactions in dilutions of 1:640. Cultures of blood, urine and stools were negative. A moderate leukopenia (3,900) with relative lymphocytosis was present. The icteric index was 19 units and the serum amylase was 250 units, later rising to 567. A course of penicillin was given without apparent benefit except that the leukopenia decreased. A blood transfusion from an immune donor seemed to have been helpful. He was also given several regular blood transfusions. In February 1946, he was discharged after a ten week period of hospitalization. He was somewhat improved but continued to have a low grade fever. One week later, the high temperature returned, reaching 104 F. daily. Prostration, repeated epistaxis and generalized aching were troublesome symptoms.

On admission to Billings Hospital, March 9, 1946, on approximately the two hundred and thirtieth day after the appearance of symptoms, the patient was acutely ill with a temperature of 103 F. Except for the general appearance of a seriously ill, febrile patient, little was noted on physical examination. The liver was slightly enlarged, the abdomen was somewhat distended and the epigastrium was tender. The spleen was not palpated and there was no notable lymphadenopathy. A soft apical systolic murmur and moderate tachycardia were the only other abnormalities.

During his stay in the hospital under our observation (charts 1 to 3) the patient had daily fever ranging from 102 to 104 F. for a period of three months. Showers of petechiae appeared over the lower extremities. The liver became moderately enlarged and tender. The spleen was barely palpable on occasion. The epigastric tenderness became more pronounced and was associated with rigidity. Palmar erythema and marked glossitis appeared. Discouragement and mental depression became so severe that strict suicidal precautions were observed for many weeks. Frequent attacks of prolonged epistaxis were troublesome and without adequate hematologic findings to explain them. Moderate normocytic anemia was present and there was persistent leukopenia with relative lymphocytosis. The serum bilirubin was slightly elevated on admission and became progressively higher with the appearance of a slight clinical jaundice. Strongly positive thymol and cephalin flocculation tests, pronounced retention of sulfobromophthalein sodium (40 per cent at thirty minutes) and a reversal of the albumin-globulin ratio of the serum proteins, ranging as low as 0.39, indicated a serious hepatic involvement. In light of the initial physical and laboratory examinations, this hepatitis can be attributed not to the therapy given but to the disease.

Blood cultures were positive for Brucella abortus on thirty-two occasions, thirty of them consecutively over a period of sixty-eight days.

Four courses of streptomycin were given with daily doses ranging from 4 to 8 Gm., and with a total dose of 189 Gm. (one gram equals 1,000,000 units). In each instance, the daily dose was given subcutaneously in eight divided doses at three hour intervals. During the third course, 6 Gm. was also given intraperitoneally. The organism isolated from the patient's blood before treatment was tested and found sensitive to streptomycin, being completely inhibited by 2.5 units and killed by 5 units per cubic centimeter of medium. Tests were again made on the organism recovered after the third course of streptomycin, at which time the patient had received a total

3. Watkins, A. L.; Cobb, S.; Finesinger, J. E.; Brazier, M. A. B.; Shands, H. C., and Pincus, G.: Psychiatric and Physiologic Studies on Fatigue, Arch. Phys. Med. **28**: 199, 1947.

4. Shands, H. C.; Finesinger, J. E.; Pincus, G.; Brazier, M. A. B.; Watkins, A. L., and Schwab, R. S.: Lymphocytes in the Psychoneuroses, Am. J. Psychiat., to be published.

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From the Department of Medicine, School of Medicine, University of Chicago.

Presented before the Annual Meeting of the American College of Physicians at Chicago, April 29, 1947.

1. Streptomycin in the Treatment of Infections, Report of the Committee on Chemotherapeutics and Other Agents, National Research Council, J. A. M. A. **132**: 4 (Sept. 7) 1946. Howe, C.; Miller, E.; Kelly, E.; Bookwalter, H., and Ellingson, H.: Acute Brucellosis Among Laboratory Workers, New England J. Med. **236**: 741 (May 15) 1947.

of 128 Gm. of the drug. The organism exhibited the same degree of sensitivity as before therapy.

The first course of streptomycin consisted of a daily dose of 4 Gm. given for seven and one-half days. The fever and the clinical condition of the patient did not change appreciably during or after treatment. Daily blood cultures were taken

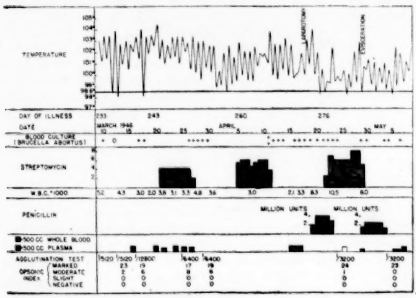

Chart 1.—Successful treatment of brucellosis with combined streptomycin and sulfadiazine in a case in which the drugs individually were ineffectual; data for period from March 9 through May 8, 1946.

for five days following the course, the first one being taken three hours after the last injection of streptomycin. All cultures were positive for Br. abortus.

The second course of streptomycin consisted of 43 Gm. given over seven and one-half days. Blood cultures were taken on the seventh and eighth days and daily for seven days after the end of treatment. All were positive for Br. abortus. Again, the fever and the clinical course showed no tendency to improvement; indeed, the patient's condition was definitely deteriorating. On the seventh day of this course, streptomycin assays and simultaneous cultures were made on the blood one-half hour and three hours after one of the regular injections of streptomycin (0.75 Gm.). Both of the cultures were positive. The streptomycin assay was 25 units per cubic centimeter at one-half hour and 10 units per cubic centimeter at three hours. Thus, Brucella was recovered from the blood at times when the streptomycin concentration was two and five

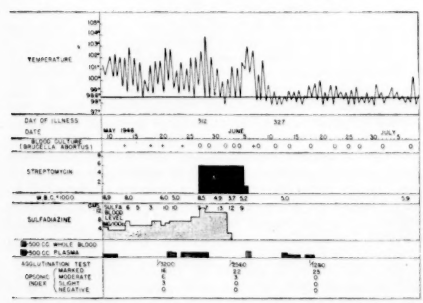

Chart 2.—Data for period from May 9 through July 8, 1946.

times as great as that required to kill the organism in vitro. This range of concentration was presumably present throughout the course of treatment.

An exploratory laparotomy was performed six days after the end of the second course of streptomycin. This was done because of the unfavorable course of the illness, the increasing tenderness and rigidity of the upper part of the abdomen, the evidence of increasing hepatic involvement and an elevated serum amylase, all of which led us to suspect the presence of an intra-abdominal abscess. At operation, an abscess was not found and there was not any ascites. The spleen was enlarged to about three times normal size. The liver was nodular and slightly enlarged; its surface was coarsely granular and was mottled red, green and yellow in color. Biopsy sections showed degeneration of parenchymal cells, pronounced infiltration of granulocytes and many areas of focal necrosis. Br. abortus was recovered in pure culture from the liver.

The postoperative course was stormy. Ascites developed rapidly and required frequent paracenteses, cultures of the fluid always being sterile. On the twelfth postoperative day, the lower end of the surgical incision separated for a distance of about 5 inches (12.7 cm.), allowing a large evisceration of the small intestine. Without removing the patient from his bed, the viscera were replaced and the wound was taped together without sutures. The patient seemed none the worse for this experience and eventually the wound healed with a resultant large incisional hernia.

The third course of streptomycin was started on the fourth postoperative day and was continued for eight days. A total of 54 Gm. was used, including 6 Gm. given intraperitoneally. Five blood cultures taken during the eight days following all yielded Br. abortus.

A twenty-eight day course of sulfadiazine was started ten days after the third course of streptomycin. The daily dose was progressively increased from 4 to 12 Gm. in an effort to maintain blood levels at about 10 mg. per hundred cubic centimeters. In numerous determinations of the blood level, essentially the entire amount of the sulfonamide compound was in the free state, the acetylated form never exceeding 0.1 mg. per hundred

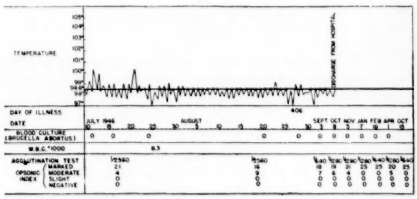

Chart 3.—Data for period from July 9, 1946 to Oct. 15, 1947.

cubic centimeters. During the first eighteen days, the fever and the clinical course showed no improvement and four blood cultures were positive.

During the last ten days of the sulfadiazine therapy, streptomycin was also given in daily doses of 6 Gm., a total of 62 Gm. being used. Five blood cultures during this period were negative—these being the first negative cultures obtained in seventy-six days. The fever dropped sharply during the first half of this period, then climbed rapidly, to drop again immediately after the combined therapy was stopped.

In a blood culture taken the day after treatment ceased, a feebly growing Br. abortus was isolated after thirty days of incubation. All previous cultures grew readily, usually in three to five days. Cultures made on the following day and on eighteen subsequent occasions were all sterile. Immediately after termination of the combined treatment, the temperature dropped and remained at or near normal levels, and clinical improvement progressed rapidly to complete recovery. During the next seventeen months, febrile relapses have not occurred. The patient appears in robust health and is working regularly at his former occupation. He complains only of the incisional hernia, and wishes to have it repaired surgically. Some of the hepatic function tests (intravenous hippuric acid, excretion of sulfobromophthalein sodium, thymol and cephalin flocculations) show evidence of residual hepatic dysfunction which is not apparent on clinical examination. Results of other hepatic function tests have returned to normal (plasma proteins, cholesterol partitioning, serum bilirubin, prothrombin time and urine urobilinogen).

During his hospitalization, the patient was given eleven transfusions of 500 cc. of whole blood and thirty-three transfusions of 250 cc. of plasma. Vitamin K, vitamin B complex and crude liver extract were given parenterally in large doses in addition to the oral administration of large doses of vitamin B complex, ascorbic acid, choline, methionine, brewer's yeast powder, iron salts and hesperidin. A diet high in protein and carbohydrate and low in fat was prescribed, and along with the oral vitamin preparations was continued for many months after discharge from the hospital.

COMMENT

Most cases of brucellosis seen in this country are not suitable for the evaluation of therapeutic agents. The disease is erratic and unpredictable in its course and duration. Many of the cases of acute disease are of relatively short duration, early recovery occurring with or without specific therapy. The septicemia frequently disappears early, with consequent loss of one of the important laboratory yardsticks for evaluating disease activity.

The ideal case of brucellosis for evaluation of therapeutic measures should have the following characteristics: (1) an illness of such a degree of severity that clinical recovery is striking, (2) fever of such magnitude that abatement will be clearcut and readily recognized, (3) a febrile period under standard hospital conditions of a duration sufficient to allow a control period before therapy and to render spontaneous remission unlikely, (4) a prolonged septicemia readily and constantly demonstrable by cultural methods and (5) clinical well-being following recovery without relapse for an adequate period.

Students of this disease will appreciate that cases of brucellosis fulfilling these criteria are encountered infrequently and that the careful study of 1 such patient is of greater value than a score of equivocal cases.

The case cited in this report meets all the criteria set forth. It demonstrates beyond doubt that streptomycin and sulfadiazine alone in therapeutic doses were ineffectual. Following the simultaneous use of sulfadiazine and streptomycin, the striking clinical improvement, the prompt and abrupt abatement of fever, the cessation of a prolonged constant septicemia and a seventeen month period of clinical well-being without relapse strongly suggest that the recovery of this patient was in response to this combined therapy.

SUMMARY

A case of brucellosis is reported which had the ideal characteristics necessary for the evaluation of therapeutic agents. No effect was noted on the clinical course, the fever or the septicemia when streptomycin and sulfadiazine were used separately in large doses. The simultaneous use of streptomycin and sulfadiazine resulted in prompt clinical and bacteriologic cure.

ADDENDUM

Since this case was presented, April 29, 1947, and since the preparation of this paper, E. J. Pulaski and W. H. Amspacher *(New England J. Med.)* **237:** 419 [Sept. 18] 1947) have reported favorable results in 3 cases of brucellosis treated with the combined use of sulfadiazine and streptomycin. W. W. Spink, W. H. Hall, J. Shaffer and A. I. Braudis *(Proc. Central Soc. Clin. Research,* to be published) have also used the combined treatment in 9 cases of brucellosis "with quite satisfactory results." Their longest period of observation was four months. To the best of our knowledge, our case was the first reported use of this treatment in brucellosis.

PANCREATIC CALCULOSIS

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and
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We have had the opportunity of having several patients suffering from the effects of pancreatic calculi exhibit their persons, their symptoms and their signs to us. In accordance with custom, we have learned by the study of these observations and, in contrast to our early inexperience, now feel a certain reasonable assurance in placing pancreatic calculi among the selections for differential diagnosis of particular symptom complexes.

In the past seven years, 11 patients who bore calcified areas in their pancreases have been recognized clinically. Nine of these patients are living. A search through the autopsy records of the Johns Hopkins Hospital revealed 10 more. The material obtained as a result of the study of these 21 cases revealed some data which may be of interest, and it is for this reason that we make the following report.

As comprehensive compilations of the historical background have been recently made, their reiteration is not indicated here.

AGE, SEX AND COLOR

The ages of the patients of this group varied between 1 year and 97 years. Pancreatic calculi were demonstrated within the living body by roentgenograms in patients whose ages were 34, 37, 39, 39, 39, 40, 42, 42, 43, 43 and 56.

Pancreatic calculi were demonstrated only at autopsy in adult patients whose ages were 52, 62, 51, 51, 48, 78, 62, 97 and 55 and in an infant of 13 months. The first 4 of these patients had had repeated attacks of epigastric pains, which we now recognize as being typical of those associated with pancreatic calculosis. The attacks antedated their death by three or more years.

It is noteworthy that the majority of those patients who gave clinical evidence of the disease were in an age group between 35 and 45 years when the disturbance was diagnosed. Most of them had had symptoms for three or more years before the nature of their ailment was ascertained.

The ages are enumerated because it is possible that these patients may offer an example of what may be expected in the patients who have the distressing pain of pancreatic calculi. It may be that, as time goes on, the stones will cease causing symptoms, as each by its occlusion causes distal atrophy, and that part of the pancreas whose drainage it blocks will cease to be irritating to those nerve endings of the autonomic system that carry sensations to the cortical centers.

In this series the male is more susceptible in that only 4 women were counted in the group of 21. To almost the same degree the white group was more subject to the formation of pancreatic calculi than the Negro. The data show that 80 per cent of the patients were white. However, approximately 70 per cent of the patients admitted to the Johns Hopkins Hospital are white.

From the Department of Medicine of the Johns Hopkins University and Hospital.

SYMPTOMS

The outstanding symptom of pancreatic calculosis is pain. It is epigastric in origin in the majority of instances, but it may also be localized in the left side of the abdomen at about the level of the pancreas. The pain, which was noted in all the clinically recognized, may be constant or it may come in attacks of paroxysmal character. Morphine is often resorted to as the only means of surcease. Three of the patients also stated that their pains passed through to their backs; it simulated the pain associated with duodenal ulcer penetrating the pancreas.

A number of the patients stated that during the attacks of pain an increase was noted about three or four hours after meals. During the paroxysm of pain there were repeated incidents of vomiting. The attacks of pain may reappear at frequent intervals or months may elapse between them. We have been unable to determine any factor contributing to their onset. It does seem established that the longer the attacks continue the more protracted they become, until the pain becomes almost constant with periods of increased intensity. There are six histories which give no evidence that the patients had experienced severe pain in the upper part of the abdomen. The history of 5 of them is sufficiently detailed to be considered as reliable. It is possible that they had epigastric pain and had forgotten it in the relief that followed its cessation. One of these patients died at the age of 51 years as a result of repeated attacks of coronary occlusion. His well detailed history gives no indication of epigastric pain. It may well be that pancreatic calculi may "remain silent" during long periods as do gallstones.

PHYSICAL EXAMINATION

Physical examination of the abdomen seldom reveals much of importance that contributes to a diagnosis of pancreatic calculosis. Three of the patients were found to have abdominal masses in the area occupied by the pancreas. One was thought to have a pancreatic cyst and a stone. This was verified at operation. On the second patient an exploratory operation was done because of the mass. It was found to lie at the head of the pancreas and was considered inoperable. Postoperative roentgenograms of the abdomen revealed the presence of multiple pancreatic calculosis. On the third patient a total pancreatectomy was done. It was attempted because of preoperative recognition of multiple pancreatic calculosis by means of roentgenographic examinations. No suggestion of pancreatic abnormality was obtained from physical examination in the other 18 cases.

COMPOSITION OF STONES

In the first case of this group coming to autopsy, an analysis was undertaken to determine the composition of the calculi. They were determined to be calcium carbonate. An analysis made later in another case (the tenth in the table) noted the same chemical basis.

CLINICAL LABORATORY EXAMINATIONS

The detailed analysis of the clinical laboratory studies made on this series of patients is shown in the accompanying table. The presence or absence of pancreatic enzymes in the duodenal contents depends on whether stones are occluding both pancreatic ducts and whether there is complete or almost complete atrophy of the acinar tissue. We have established the presence of pancreatic enzymes in the duodenal contents of 7 of the patients studied clinically. Consequently, steatorrhea of pancreatic origin could not have been a common finding. Studies of percentage of fat in the stools were not made on this group of patients.

The most prominent chemical abnormality associated with the secondary atrophy and scarring of the gland is hyperglycemia or glucose tolerance curves characteristic of diabetes. Diabetes has been found in 6 of the 11 patients whose pancreatic calculi were recognized clinically. Diabetes was demonstrated clinically in but 1 patient of that group in whom the pancreatic calculosis was diagnosed only at autopsy. It might have been discovered in more of the cases in which there was autopsy had a more careful clinical search been made. In any case, it appears in the clinically recognized series in a substantially greater percentage than in the population at large.

One case of hypercalcemia was noted. It was produced by a parathyroid tumor, a diagnosis verified at

Summary of Laboratory Data in Fourteen Cases of Pancreatic Calculosis

Case; Sex	Age; Color	Calcium, Mg./100 Cc.	Phosphorus, Mg./100 Cc.	Nonprotein Nitrogen, Mg.	Serum Protein, Gm.	CO_2 Vol./%	Cholesterol, Mg.	Bilirubin	Phosphatase, Units	Cl, Mg.	Prothrombin Time	Pancreatic Enzymes	Free HCl, Cc.	Gallbladder	Glucose Tolerance	Glucose, Fasting, Mg.	Urine Glucose	Hemoglobin, Gm.
1 M	50 C	14.2	2.0	32	6.5	42.8	153	Trace	....	....	..	..	..	..	..	80	0	13.5
2 M	58 C	10.5	3.1	30	7.56	65.5	158	..	11.5	95	14	Normal	..	..	..	200	+	16
3 M	38 W	10.1 10.1 10.1	3.2 3.2 3.0	38	....	....	....	..	....	....	..	Reduced	..	..	Diabetic	161	+	16.2
4 M	39 W	9.8	...	26	6.5	53	...	Trace	3.5	103	..	Normal	0	Normal	Normal	93	0	14.8
5 M	36 W	10.8 10.4	3.2	20	5.4 6.7	55	102	Trace	17.2	98	14	..	35	Normal	Normal twice	75	0	15
6 M	51 W	10.1	3.4	30	7.0	56	105	Trace	....	102	15	..	..	..	..	94	0	14.2
7 F	46 W	9.5	4.2	30	6.6	54	188	Trace	6.5	105	..	Normal	54	Removed	Diabetic	85	+	12.8
8 M	43 W	10.1	4.0	28	....	54	...	Trace	....	99	..	..	45	..	..	....	..	13
9 M	37 W	10.2	3.5	..	6.0	....	...	..	....	...	..	..	..	..	Diabetic	145	+	14.7
10 M	62 W	8.2	...	..	....	32	...	..	....	92	..	..	..	..	..	127	+	12
11 M	42 W	10.1	2.5	30	6.8	57	154	Trace	4.0	103	15	Normal	62	Normal	Normal	98	0	16
12 F	41 W	10.4	2.3	29	6.5	54	168	Trace	17.2	104	..	Normal	38	Normal	Diabetic	200	+	13.4
13 M	39 W	10.3	4.0	30	6.2	....	173	263 mg.	12.2	...	18	Reduced	93	Normal	Diabetic	106	0	13.8
14 F	43 C	10.1	3.7	27	6.9	....	181	Trace	4.1	100	14	..	..	Normal	Normal	79	0	14.0

autopsy. With this exception, serum calcium did not deviate from normal limits. There was no indication of abnormality in the other electrolytes studied. Jaundice was noted in 1 patient. It was thought to result from pressure on the duct within the pancreas, for at operation his common duct was found to be dilated but no obstruction was found in it. With this one exception, there was no indication of organic or functional change in the liver. There were four results for serum alkaline phosphatase determinations that were well above average figures, in the 7 patients on whom these determinations were made. One had been jaundiced prior to admission into the hospital, and his skin had become almost pigment free. Before the operation just mentioned, his serum bilirubin had returned to 2.1 mg. per hundred cubic centimeters.

Diagnosis may be made with assurance when the roentgenogram reveals numerous radio-opaque particles scattered throughout the gland. In our series, the calculi were generalized from head to tail. The detailed description of 1 case shows that symptoms of pancreatic calculosis may precede demonstration of radio-opacities in the organ by many months. It is impossible to say whether this is the usual course of events, but it is difficult to believe that accumulations of calcium in the form of scattered particles of minute sizes could give a shadow. They may, however, cause distention of the small ducts and consequently produce pain.

CAUSATION

In only 1 case do we have any indication of the cause of the formation of the pancreatic calculi. This patient had a tumor of one of his parathyroid glands and an accompanying hypercalcemia (14 mg. and more per hundred cubic centimeters of serum). He was found to have other calculi in his kidneys, prostate and urinary bladder.

We can offer no satisfactory explanation of the etiologic basis leading to the depositions of calcium carbonate in the ducts or in the tissues. A review of the sections made from biopsy and autopsy specimens gives no consistent evidence of underlying infectious basis.

Chronic alcoholism was noted in 8 of the 21 cases here reviewed. Each of these 8 patients had been a steady drinker of large amounts of alcohol before the onset of attacks of epigastric pain. Alcoholism may be a contributing factor in the disease.

PATHOLOGIC CHANGES

The gross pathologic changes in the gland varied in relation to the stages of activity of the underlying process.

The pancreas was examined at operation in 9 patients. In 1 of them it was reported as small and fibrotic. In 1 it was reported as approximating normal size, and in the 7 others it was considered enlarged. Cysts of important size were noted in 2 of these cases. Multiple calculi were noted in all. Sections for microscopic examinations were made on 6 biopsy specimens, all of which revealed dilated ducts and acinar atrophy throughout various portions of the gland. In only 2 of the 6 biopsy tissues examined was evidence of inflammation noted. Widespread scarring and fibrosis were noted in all the glands. The islet cells were noted; in 5 specimens they were considered to be reduced in number.

Autopsies were made in 11 cases. In 6 of these the patients had given no indication in their histories that they had experienced epigastric pain or nausea or vomiting. In 5 of these 6 the gland was small, fibrotic and hard. Histologic examinations revealed extensive replacement of acinar cells by fibrotic tissue. The islet cells were reported reduced in quantity. In 3 instances evidence of inflammation was noted. The gland that was of normal size contained one stone in the accessory duct. The acinar cells in the area drained by this duct were atrophic. There was local fibrosis, and the islands of Langerhans in this area were diminished in number.

The other 5 patients had had symptoms of epigastric pain prior to death. The length of symptoms varied from months to several years. The size of the gland of the baby was about normal. The gland in the 4 adults was enlarged, and in 1 case contained a large cyst. In the 3 other patients, the gland was of small dimensions. In all, there were dilated ducts and a generalized atrophy of the acinar cells with widespread scarring and fibrosis. One of these 4 patients was found to have evidence of inflammatory reaction. In three of these glands there was no obvious diminution in the number of islet cells.

An incomplete review of the numerous cases of pancreatic cysts or dilated ducts listed in the department of pathology reveals an absence of associated pancreatic calculi, except in those cases related in this group.

NOTES ON FOUR CASES

We had the exceptional opportunity to study a patient as demonstrable pancreatic calculosis developed.

CASE 1.—In the spring of 1943, a white man 42 years of age consulted one of us (L. M.). He complained of three attacks, which had occurred in the past eighteen months, of severe pains in the epigastrium and in the upper left quadrant radiating into the back. He needed morphine for relief. The attacks lasted three or four days each. He was a highstrung, tense, hard working man, and he was obviously overworked. We were unable to determine any cause for his pains, which disappeared at about the time of the institution of the first studies of his ailment. His intravenous pyelograms did not reveal any abnormality. Roentgen studies of his gastrointestinal tract were normal, and a plain roentgenogram of his abdomen did not reveal the presence of calculi within the abdominal viscera. Extensive laboratory studies gave normal results. It was felt that the pain was caused by spasm induced from a psychogenic basis.

About five months later a similar series of symptoms recurred; the pain was again of colic severity and recurred over a period of several days. Another study gave negative results.

Three years ago the symptoms reappeared. At this time the patient stated that they were enhanced several hours after eating. From that time on the attacks appeared every four to five months and continued for about two or three weeks. In July 1945 another plain roentgenogram of his abdomen revealed no evidence of calculi within any abdominal viscera. In October of that year a single rounded, radio-opaque body was noted just to the right of the transverse process of the second lumbar vertebra. Pains were present in the upper part of the abdomen and the upper left quadrant, but during December 1945 and the first three months of 1946 they were smolderingly present during the day and they appeared at intervals with severity. A plain roentgenogram of the abdomen was taken in March 1946, and to our astonishment revealed a widespread cloud of calculi present throughout the area occupied by the pancreas. A review of his preceding roentgenograms revealed a substantial increase in size of the stone occupying the position of the head of the pancreas. The preceding film also revealed a few faint shadows in the area occupied by the tail of the organ. At the time of the first examinations they had probably been considered material within the loops of the bowel. The foregoing films are reproduced in the text.

Numerous laboratory studies were made repeatedly for this patient, and no important deviation from normal was noted. The blood counts and hematocrit reading were within normal range. Sulfobromophthalein and phenolsulfonphthalein tests gave average normal results. Serum calcium was about 10 mg. per hundred cubic centimeters repeatedly. Phosphate concentration

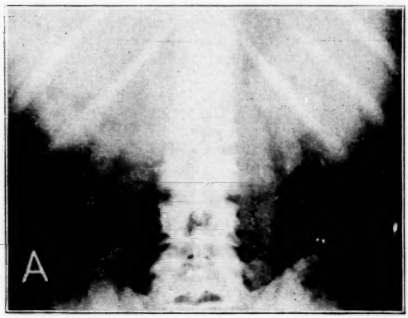

Fig. 1A.—Roentgenogram of abdomen, July 1945.

and phosphatase activity were normal. Pancreatic enzymes were demonstrated in duodenal contents and glucose tolerance was not abnormal. The urine was clear. Roentgenograms of the gallbladder showed normal functioning of the organ. The one important symptom was severe epigastric pain and pain in the left upper quadrant with occasional radiation to the back. As the patient was in severe distress, it was considered necessary to use surgical treatment in the hope of relieving his pain. One of us had carefully considered a suggestion made by a fourth year student at ward rounds on the advisability of pancreatectomy on another male patient, included in this series. He asked whether ligation of the pancreatic duct might not be beneficial, since an atrophy of the acinar cells would follow and the islands of Langerhans would probably continue to

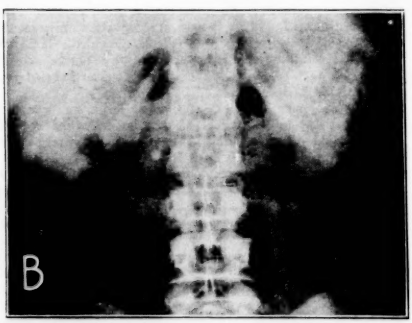

Fig. 1B.—Roentgenogram of abdomen, October, 1945.

function. The indirect suggestion drew favorable comment, but the patient was not operated on for fear that the acute obstruction might produce a rupture of a small cyst lying on the surface of the gland.

Now seemed the occasion to apply the procedure of duct ligation to a patient who was not diabetic, not alcoholic, and not a narcotic addict. Accordingly, Dr. William F. Rienhoff was asked to try to ligate the pancreatic ducts. He operated on the patient in the Union Memorial Hospital in March 1946.

Observations at Operation.—The pancreas was extremely large, roughly measuring 10 by 20 cm. It was felt as irregular and indurated, although not stony hard. During the course of the exploration, numerous small calculi were removed from the dilated ducts, and a release of pancreatic fluid was obtained from some of them.

Procedure.—It was elected to place several sutures of medium black silk in the gland so as to tie off both the duct of Santorini and the duct of Wirsung in the region of the head of the pancreas.

Biopsy of the Pancreas (histologic interpretation of Dr. Merkel).—"There is a marked fibrosis distorting the parenchyma and pancreatic ducts. Most of the ducts are conspicuous because of dilatation. There is no leukocytic infiltration. There are patches showing autolysis of the parenchyma and extravasation of blood into the interstitial fascia. The concretions had to be removed before the tissue was sectioned."

Postoperative Course.—After the operation, a fistula developed from which drained a whitish fluid. It appeared in gushes, so that considerable quantities could be obtained and placed promptly in the icebox. The fistula ceased draining after ten days, and the patient made a prompt recovery. An analysis of this fluid revealed the presence of enzymes that digested casein and starch at a buffered p_H of 7.4.

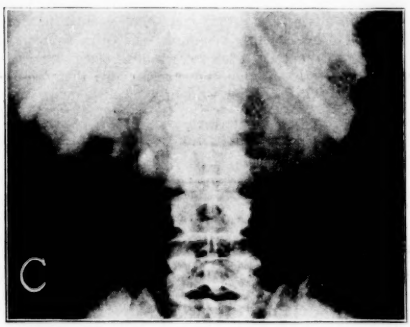

Fig. 1C.—Roentgenogram of abdomen, March, 1946.

Chemical analysis was performed by accepted methods, with the following results:

Total nitrogen	0.140 *	Chlorides	106.0 †
Calcium	4.2 *	Sodium	155.5 †
Phosphorus	3.2 *	Potassium	5.0 †

* Grams per cent of whole material.
† Milliequivalents per liter of filtrate of material.

The patient became free of abdominal pain immediately after the operation and remained free of pain up to the time that he was last seen, ten months postoperatively. He was in excellent health, his appetite was good and bowel movements were regular. He had regained his preoperative weight. He has found that fatty foods produce symptoms such as gas, eructation, abdominal distention and a feeling of heaviness in his abdomen. About a month after operation, a mild diarrhea developed, four to five soft stools a day. While he was taking belladonna, the diarrhea ceased, and it did not return after administration of the drug was discontinued.

When he was last examined a duodenal tube was inserted so that its tip lay at about the ampulla of Vater. This was confirmed by fluoroscopic examination. After the instillation of 30 cc. of 30 per cent magnesium sulfate, a copious flow of A, B and C bile was obtained. The specimens were clear and no microscopic evidence of leukocytes or bilirubinate crystals was noted. Tests for trypin and diastase activity at a buffered p_H of 7.4 revealed no evidence of their presence. Casein and starch were the substrates. Roentgenograms of the pancreas were made, and revealed approximately the same number of calculi.

Chemical analysis of his blood revealed: serum cholesterol, 190 mg. per hundred cubic centimeters; fasting blood sugar, 100 mg. per hundred cubic centimeters; blood sugar, one and one-half hours after breakfast containing substantial carbohydrate, was 130 mg. per hundred cubic centimeters. There was no evidence of sugar in his urine.

CASE 2.—Another patient whose history and treatment are noteworthy, a thin man of 35 years, entered the hospital in 1939 complaining of recurrent severe attacks of pain in the upper part of the abdomen that gave him great distress. He had been a heavy drinker for six years. His attacks of abdominal pain were usually of about six weeks' duration. Physical examination revealed nothing of importance diagnostically. None of the several men who studied his case thought of pancreatic calculosis as a basis of his symptoms, although they knew that roentgen studies made elsewhere of the gallbladder and gastrointestinal tract revealed no abnormalities in these organs. Similar negative roentgen studies of gallbladder and gastrointestinal tract were made here. However, it was noted that many pancreatic calculi could be shown in the area occupied by the body of he pancreas.

His red blood cell counts were normal; ther· were 21,750 leukocytes. The retention of sulfobromophthalein at thirty minutes was less than 5 per cent. The serum tests for syphilis elicited negative reactions. A glucose tolerance test showed a diminished tolerance. The fasting level was 161 mg.; at one-half hour it was 219; at one hour, 266; at two hours, 380, and at three hours, 346. The serum calcium was 9.5 mg. per hundred cubic centimeters. The phosphorus was 4.4 mg. His urine showed sugar. He was discharged untreated but, as the pain continued, he returned to the hospital in a few months. Dr. Rienhoff operated on him and found a small fibrotic dense pancreas which could be freely moved. It appeared to consist mainly of scar tissue containing many nodosities which were produced by calculi. The microscopic study of biopsy tissue showed that the acini, in the pancreatic tissue which was present, were widely separated by bands of connective tissue fibers which included a few small accumulations of mononuclear cells. Several dilated ducts were also seen in the connective tissues. A few islands of Langerhans were present. They were atrophic and at times surrounded by mononuclear cells. The operator removed one stone about 3 cm. in diameter. Postoperatively there was no diminution in the patient's symptoms.

The patient was readmitted to the hospital in 1940, 1943 and 1944 for further study and regulation of his diabetes with insulin. He became addicted to morphine, but stopped his alcoholic excess to a notable degree. In March 1946 he returned in an emaciated condition. He continued to have abdominal pain. His blood pressure was 95 systolic and 60 diastolic. Laboratory tests revealed nothing of importance except hyperglycemia. Roentgenograms of the pancreas showed an increase in the number of calculi. An estimation of his pancreatic enzymes at this admission showed only possible traces of activity. In the hope of stopping this patient's pain, Dr. Rienhoff operated on him in April 1946. In a two stage operation, by transthoracic approach, he elected to remove the sympathetic ganglionated nerve trunks from the eighth dorsal to the twelfth, the splanchnic nerves were sectioned and as far as possible removed. Several centimeters of the thoracic vagus nerves were removed. For some time after operation the patient experienced the pain that usually results from bilateral dorsal sympathectomy, so that it was difficult to evaluate the immediate results of the operation for the relief of the pain of pancreatic calculosis. His blood pressure remained at the preoperative level of 95 systolic and 60 diastolic. His diabetes was controlled with 30 units of insulin, as was the case before operation. Gradually the patient improved. His postoperative pains ceased. He stopped the use of drugs, and now, ten months after operation, he has gained 50 pounds (22.7 Kg.). He feels well and he has returned to work. His blood pressure is 100 systolic and 60 diastolic. His diabetes has remained about the same.

Two other patients have been observed during the period of development of their pancreatic calculosis.

CASE 3.—The first woman was observed in 1937 when she suffered from the first attack of epigastric pain that have persisted to date. At that time she was a chronic imbiber of alcohol. She was operated on for a postulated gallbladder disease, although roentgenograms showed normal functioning of the organ. The surgeon found a normal gallbladder but noted that her pancreas was enlarged and hard. No adequate roentgenograms of her pancreatic region were made at that time. It was only years later that the presence of pancreatic calculosis was determined by roentgenograms. One can only wonder as to the cause of her initial attacks of pain. Were they the results of inflammatory attacks, or were there small amounts of gravel present at the time? We are contemplating ligation of pancreatic ducts on this patient.

CASE 4.—The second patient experienced repeated attacks of nausea and vomiting over a number of years before the attacks became associated with pains in the epigastrium and left upper quadrant. For several years the pain was considered to arise from a psychogenic basis, and later she was considered to be suffering from chronic pancreatiti.. The diagnosis of pancreatic calculosis was made in 1946 by means of roentgenograms. At this time, she was a narcotic addict. A review of the roentgenograms made in 1942 revealed the presence of small scattered opacities in the area occupied by the distal half of the pancreas.

In June 1946 the patient was operated on by Dr. Warfield M. Firor. He elected to do a subtotal pancreatectomy and removed all of the gland except that small portion that approximated the duodenum. The microscopic study of the sections made from biopsy matter of the pancreas revealed extensive scarring, with the inclusion of occasional areas of chronic inflammatory reaction. She made an excellent recovery and became immediately free of abdominal pain. She has remained so for six postoperative months. Since operation her diabetes has been controlled by 10 units of plain insulin and 15 units of protamine zinc-insulin daily.

COMMENT

Our studies of the patients of the group that we have seen and of the histories of the others make it obvious that the thought of pancreatic calculosis as the cause of the patient's symptoms had not been entertained by their physicians. The diagnosis has been made by roentgen examination of the abdomen or laparotomy or at autopsy.

It seems demonstrated that during the earlier stages of generalized pancreatic calculosis the gland becomes enlarged because of the distention of ducts and acini. As the obstruction becomes more complete the increased pressure will, in time, cause a cessation of secretions, and the acinar tissue will atrophy. Cysts may therefore be formed, or, with absorption of pancreatic fluid or dispersion of it into contiguous tissues, atrophy of the pancreas may follow. With cessation of secretion or with atrophy there may be no stimulation of those autonomic sensory organs which initiate the sensation registered in the cerebral cortex as pain.

With atrophy occurring in places and cystic formations in others, the topography of the gland will change, and its final size will depend on the relative proportions of these two end processes. The majority of those cases in which diagnosis was made only at autopsy revealed a diminution of the size of the gland. This may well explain why 5 of these patients gave no history of epigastric pain prior to entrance into the hospital. They may have had pain long before and forgotten it or considered it unimportant and unrelated to the illness which brought them into the hospital.

The protracted course of the ailment and the years of pain would seem to indicate that the process of occlusion and atrophy is a slow one and that for a relatively long period enough of the acini remain functioning to continue their irritating effects on the nerve

terminals which would transmit sensations of pain. It may be that the continuance of the pain is due to the continued formation of new calculi. The pain produced by the pancreatic calculi may indicate an activity of the pathologic process within the gland. This may explain the increased size and induration of the glands which have been noted by the surgeons. The diabetes associated with pancreatic calculosis may be the result of an infectious process or it may be due to destruction of the islet cells either from pressure by dilating ducts or acini or by involvement in the subsequent scarring reactions.

Eleven patients suffering from the effects of pancreatic calculosis have been recognized clinically. The diagnosis in 3 cases was made primarily at surgical intervention: In 2 of these exploratory operation was done by a surgeon because of a mass in the abdomen. In the third case an exploratory laparotomy was done because of repeated attacks of epigastric colic, and stones were found in the pancreas.

The diagnosis in the other 8 cases was made by roentgenographic studies which were directed for the detection of other postulated abnormalities than pancreatic calculi.

One of the patients died after operation for marsupialization of a large pancreatic cyst. The second died from perforation of a jejunal ulcer following pancreatectomy. Three have been operated on successfully, each by a different type of operation. The other 6 are in varying and unsatisfactory states of health.

TREATMENT

Medical treatment offers little. If enough of the ducts are occluded to diminish importantly the flow of pancreatic juice, it would seem that pancreatic extract is indicated to aid digestion. The diabetes in several of the patients was severe enough to warrant the use of insulin so that they could consume sufficient carbohydrates to retain their weight. We have tried a low fat diet on which none of the patients attained any relief of symptoms. It is true that we have noticed an increase in pain after eating, but this would seem to be related to no particular type of food ingredient. Patients have enough pain that they are inclined to lose their appetite.

The only effective alleviating agent that we have found for the pain is some form of narcotic, generally codeine if of sufficient strength, but many of these patients have become morphine addicts. It is probably true that if the pain does not first wear out the patient, it may cease as the pancreas becomes atrophied. This naturally increases the chances for the development of diabetes mellitus.

Surgical treatment offers the only means of relief known at present. There are five methods of surgical procedure that have been employed in this clinic. In our opinion, the operation of choice is ligation of pancreatic ducts. The results in the case described have been excellent to date. The patient is free of pain, does not have diabetes and is in excellent health.

Subtotal pancreatectomy has been performed by Dr. Firor with excellent results. The diabetes is controlled with 25 units of insulin daily. Doubtless, in feasible cases, this might be the operation indicated.

The operation on the autonomic nervous system done by Dr. Rienhoff was based on the idea of interrupting the different pathways of pain from the pancreas to the cerebral cortex. The operation consisted of a bilateral dorsal sympathectomy, splanchnicectomy and vagotomy. There is obvious ground for discussion in this case. One could argue that the vagus need not be sectioned. One could say that less extensive sympathetic resection is indicated. Two facts stand out. The patient is free of pain and narcotic addiction and, secondly, he feels well and has gained 50 pounds in weight. Further investigation is necessarily indicated to determine the amount of nerve evulsion needed to obtain the results desired by this type of operation.

The fourth operation used in this group is pancreatectomy. It was performed on 1 patient of this group by Dr. Blalock. For several weeks, the patient was in fair condition and was regulated with 15 units of insulin given three times daily. Unfortunately, he died of a perforated jejunal ulcer. This is a formidable operation, and we would choose it only in exceptional cases.

The fifth type of operation, which was abandoned a few years ago, was pancreatotomy and removal of as many calculi as possible. The results were unsatisfactory on 3 patients.

The postoperative treatment of patients who have been operated on for ligation of pancreatic ducts or for either total or subtotal pancreatectomy may involve the use of replacement treatment by lipocaic, or choline, or one of the more recently extracted pancreatic fractions, to establish lipolytic equilibrium. Two of the patients reported in the series are receiving choline extract; one after ligation of the ducts, and the other after subtotal pancreatectomy.

SUMMARY

A study of 21 cases of pancreatic calculosis has been detailed. The greatest incidence of onset of symptoms lay between 35 and 45 years. Males are more affected than females.

Epigastric pain, usually recurring in attacks, is the cardinal symptom. It occurred in all the patients recognized clinically, and was reported in 4 of those recognized at autopsy. A small proportion of the patients with pancreatic calculosis gave no history of abdominal pain. In these patients, diagnosis was made at autopsy. Alcoholism antedated the initial abdominal pain in 8 of the 21 cases. Inflammatory reaction within the gland was noted in 2 of 6 biopsy specimens. It was noted in 4 of 11 autopsy studies.

Most patients with this disease process are in an unfortunate position. In the course of its development they may look forward to years of pain, with only a hope that eventual atrophy of the gland will bring surcease. They may also look forward to a 25 per cent chance of acquiring diabetes. Many of them will probably not be able to withstand the pain, and they will become narcotic addicts. Many of them will become emaciated and weak from lack of food, for they will prefer starvation to the pain instituted by eating.

Medical treatment offers little, and the importance of surgical intervention is obvious if the secondary accompaniments of the disease are to be avoided.

Present trends of surgical intervention lie along these lines: (1) ligation of pancreatic ducts to produce atrophy of acinar tissue and which will probably not lead to destruction of remaining islets of Langerhans; (2) when feasible subtotal pancreatectomy or total pancreatectomy, and (3) interruption of the autonomic afferent sensory fibers which conduct pathways relaying pain to the cerebral cortex.

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Special Articles

CANCER OF THE COLON

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This article is the second of a series to be published by the American Medical Association in cooperation with the American Cancer Society. The series is designed to aid in the early diagnosis of cancer and thereby to gain more effective results in treatment. When complete, the series will be published in book form by the W. B. Saunders Company under the sponsorship of the American Medical Association and the American Cancer Society.

Carcinoma is by long odds the most commonly observed tumor of the colon and accounts for about 7 per cent of all cancer. Because of years of intensive study and in spite of inherent difficulties of surgical attack, there has been a pronounced betterment of diagnosis and a remarkable improvement in the results of treatment of this disease. Although the management of cancer of the colon may be considered satisfactory or even good when compared to that of cancer in other parts of the alimentary tract, it is still capable of great improvement by intensifying the application of present known methods of diagnosis and treatment. Surgery, which at present offers the only hope of cure or palliation, has advanced to a point where the reduction of mortality and morbidity and the good end results of treatment of the disease in its early stages reach far beyond the skill of diagnosis. Far too many patients can be offered only palliation because the disease has reached a hopeless state before surgical extirpation could be effected. Technical management will be further improved, but the hope for better results lies importantly in the field of earlier diagnosis. This is the most urgent phase of the problem.

Thorough knowledge of the anatomy and physiology of the colon and the pathology of malignant disease to which it is heir are essential to proper understanding and management of cancer of the colon.

ANATOMY AND PHYSIOLOGY

Developmentally, anatomically and physiologically the right and left side of the colon differ so greatly that it may almost be considered a dual organ. The ascending colon and the right half of the transverse colon develop from that portion of the primitive intestinal tube called the midgut. As a result, this portion of the colon simulates the function of the small bowel that develops with it, namely, assimilation and absorption. The left half of the colon, on the other hand, is developed from the primitive hindgut. Probably the most important functions of this part of the large bowel are storage and expulsion.

The colon is about 130 cm. in length and constitutes about 25 per cent of the length of the whole intestinal canal. From cecum to sigmoid the diameter gradually diminishes and becomes narrowest at the junction of the sigmoid colon and rectum. Its sacculated form is due to the singular arrangement of the longitudinal muscle fibers, which, instead of being equally distributed over the surface as in the case of the small intestine, are present in three narrow bands, the taenia coli.

The cecum is usually mobile and covered with peritoneum and may be said to resemble a second stomach. Because of its location and function it is subject to greater irritation than the remainder of the colon with the exception of the sigmoid colon.

The ascending colon is normally firmly fixed to the posterior portion of the abdominal wall by fusion of the parietal peritoneum with that of the bowel. The lumen of the colon is narrowed at the hepatic flexure. This segment is held firmly in place by its peritoneal attachments.

The transverse colon swings freely on its mesentery from two fixed points, the hepatic and splenic flexures. Both the length of the transverse colon and its mesentery are subject to considerable variation. However, it is usually the most mobile part of the colon.

The splenic flexure is also firmly fixed in position by its peritoneal attachments. Its high fixed position can offer difficulty in surgical procedures in this region. Because of the proximity of the stomach and spleen these organs are often involved in cancer of the splenic flexure.

Normally empty, the descending colon begins at the splenic flexure and joins the sigmoid colon at the brim of the pelvis. As a rule the sigmoid colon is freely mobile on its mesentery. It acts as a storage space for the products of digestion prior to elimination. Because of this, it is thought that the sigmoid colon is subjected to greater irritation than any other part of the colon.

The blood supply tends to follow the developmental pattern. The ascending colon and the major part of the transverse colon derive their blood supply from the superior mesenteric artery, while the left side of the colon obtains its blood supply from the inferior mesenteric artery. Blood reaching the colon passes successively through marginal arteries, secondary arcades and finally into terminal arteries. According to Steward and Rankin [1] there are seldom anastomoses between the terminal arteries before they enter the colon, a point of critical importance when operating on the large bowel.

In general the greatest part of the venous return follows the arterial supply and passes through the portal system to the liver. It is then returned to the systemic venous system by means of the hepatic veins.

The lymphatic vessels of the colon also tend to follow the arteries. Jamieson and Dobson [2] described four main locations for the lymphatics, namely: epicolic, paracolic, intermediate and main group of glands. Because the lymphatics follow the arteries it is necessary when operating for carcinoma of the colon to ligate the blood supply as close to its origin as possible in order to remove the greatest amount of lymphatic tissue. It has also been demonstrated by Coller, Kay and MacIntyre [3] that cancers of the cecum, ascending colon, hepatic flexure and right transverse colon may spread in a retrograde fashion to involve lymph nodes in the ileo-

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1. Steward, J. A., and Rankin, F. W.: Blood Supply of the Large Intestine, and Its Surgical Consideration, Arch. Surg. **26**: 843 (May) 1933.

2. Jamieson, J. K., and Dobson, J. F.: The Lymphatics of the Colon, Ann. Surg. **50**: 1077, 1909.

3. Coller, F. A.; Kay, E. B., and MacIntyre, D. S.: Regional Lymphatic Metastases of Carcinoma of the Colon, Ann. Surg. **114**: 56, 1941.

due to a perversion of the function of the mucous membrane to the extent that the absorption of toxins results. As Lahey [11] has pointed out, however, patients with cancer of the right half of the colon may appear completely inoperable in terms of cachexia and the pallor of anemia and yet be resectable. Gross blood in the stool in patients with cancer of the right side of the colon is not unusual in our experience. Fifteen of 40 cases (37.5 per cent) gave a history of rectal bleeding. This figure is higher than that usually reported.

A mass, either found accidentally by the patient or discovered during a routine physical examination, is peculiar to cancer of the right half of the colon. In 11 of 40 cases (27.5 per cent) the patients gave a history of mass at the time they were seen at our hospital. Undoubtedly this figure is high, due to screening of these patients by referring physicians.

Cancer of the hepatic and splenic flexures may produce obstructive symptoms, because the angulation of the bowel in these segments reduces the diameter of the colon as compared with that of the remainder of the large bowel.

Obstructive phenomena more frequently dominate the clinical picture of cancer of the left side of the bowel. In a series of 110 carcinomas of this segment of the bowel (splenic flexure, descending and sigmoid colon) 21, or 19 per cent, of the patients presented themselves with acute bowel obstruction due to a malignant process. Cancer is the most frequent cause of obstruction of the large bowel. In a series of 104 cases of intestinal obstruction studied by Graham [12] 24 were in the colon, and of these 19, or 79 per cent, were due to cancer. Obstruction may result early or late in perforation locally or most frequently in the cecum with resultant peritonitis.

A change in bowel habits was noted in 81 of the 110 patients with cancer of the left half of the colon (73.6 per cent). Constipation or diarrhea were evenly divided as a single symptom, one or the other being present in 88 per cent. In the remainder alternating constipation and diarrhea were present. All these 10 patients had carcinoma of the sigmoid colon.

Two thirds of the 81 persons with cancer of the left half of the colon had gross blood in their stools. As previously shown, anemia is not as frequent in cancer of the left side of the colon as it is in that of the right side. When present it suggests that there is a better than even chance that the lesion is not operable.

Thirty-eight patients in the series of 167 with cancers of the colon gave a history of loss of weight of 15 pounds (6.8 Kg.) or more during the course of their disease. Twenty-one, or 55.3 per cent, proved to be resectable at operation. No definite correlation between prognosis and loss of weight could be established.

DIAGNOSIS

The importance of early and proper diagnostic procedure in suspected lesions of the colon cannot be overemphasized. In addition to a complete physical examination an adequate examination should include the following: (1) digital rectal examination; (2) sigmoidoscopic examination, and (3) barium enema and air contrast roentgenologic studies.

Rectal examination should be just as much a part of the routine physical examination as auscultation of the chest and palpation of the abdomen. While it is true that as regards carcinoma of the colon only the low lying growths at the rectosigmoid junction could possibly be palpable to the examining finger, rectal examination is mandatory in a colon workup. Graham [13] has reported a series of carcinomas of the rectum in which 50 per cent of the lesions were incorrectly diagnosed, and yet in all cases but 3 the growths were within reach of the examining finger.

Sigmoidoscopic examination is not difficult but does require reasonable skill to obtain visualization through the full length of the sigmoidoscope. Adequate visualization can be obtained only when the rectum and sigmoid colon are entirely free of fecal matter. Several enemas may be necessary to provide satisfactory removal of feces, but initial thorough preparation will save time by not submitting the patient to repeated attempted examinations.

The patient should lie prone on the examining table with his head firmly against an elevated head rest. Examination is greatly facilitated if the table can now be broken in the middle so that the patient is suspended from his hips and the trunk and head are in a straight up and down position. This places maximum upward traction on the sigmoid colon and facilitates passage of the sigmoidoscope past the angulation of the rectosigmoid junction.

After thorough lubrication of the warmed sigmoidoscope it is gently inserted into the anus. The obturator is then removed, and under direct visualization the instrument is carefully inserted to the rectosigmoid junction. At this point the patient should be told that he will experience mild cramps in the lower part of his abdomen, as these are produced in many cases when the sigmoid colon is entered. It may be possible to pass the instrument into the sigmoid colon without the insufflation of air, as this adds to the patient's discomfort, but many times gentle insufflation is necessary to prevent prolapse of the bowel into the sigmoidoscope and thus insure adequate visualization. After the instrument has been completely passed it is slowly withdrawn; then, using gentle suction to clear accumulations of fluid and débris, the bowel wall is carefully inspected. Suitable biopsy specimens are taken with a sigmoid biopsy forceps, being sure that part of the base of the lesion is included in the specimen.

Passage of the sigmoidoscope under direct visualization and with constant gentleness cannot be too greatly stressed. Not only is ill advised and rough manipulation of this instrument extremely uncomfortable to the patient, but rupture of the bowel may occur, a disaster that can and should be avoided.

Roentgenologic studies are the best diagnostic method available for cancers of the colon that cannot be visualized with the sigmoidoscope. Barium enema followed by air contrast studies are unusually accurate in the diagnosis of cancer of the colon, the error being less than 5 per cent.

Because polyps are a precancerous lesion in the colon, their identification is important. However, the diagnosis of polyps of the colon can sometimes be treacherous. Patients have undergone operative intervention

11. Lahey, F. H.: Diagnostic and Prognostic Signs in Carcinoma of the Colon, Lahey Clin. Bull. **4**: 162, 1945.
12. Graham, R. R.: Carcinoma of the Colon, Am. J. Digest. Dis. & Nutrition **1**: 584, 1934.
13. Graham, A. S.: Carcinoma of the Sigmoid and Rectum: Common Diagnostic Errors Which Are Readily Avoidable, Virginia M. Monthly **64**: 143, 1937.

for the removal of polyps in cases in which none were found. If polyps are suggested by initial roentgen examinations, these studies should be repeated in a few days to be sure that the defect is constant. David [7] has advised repeated stereoscopic films of the barium enema and air contrast study when one is attempting to identify polyps of the colon.

The incidence of hemorrhoids in association with cancer of the lower portion of the large bowel is striking. At this clinic no hemorrhoidectomy is performed until the patient is first examined with the sigmoidoscope and given a barium enema. Hemorrhoids should be considered a symptom of rectal or colonic disorders until proved otherwise by the elimination of concomitant rectal or colon disease. It has been reliably reported [14] that as high as 75 per cent of patients whose disease is eventually diagnosed as cancer of the rectum have had treatment for hemorrhoids. A note of warning should be sounded concerning roentgen examination. Not infrequently one sees a patient who has been given barium by mouth for the study of the upper portion of the gastrointestinal tract to discover the cause of vague symptoms of indigestion. The primary lesion which is in the colon may have caused partial obstruction, and the mass of barium becomes impacted above this constriction. The column of barium may cause complete obstruction and result in perforation of the colon; in every case it complicates proper treatment. Whenever there is a possibility that symptoms are being caused by a lesion of the colon, a barium enema should precede the study of the upper portion of the gastrointestinal tract in which barium is given by mouth.

PROGNOSIS

As progressively larger series of cases are obtained for careful analysis, little doubt remains that cancer of the colon offers a favorable prognosis if the lesion can be dealt with before local and regional metastatic spread has taken place. Prognosis in the untreated case is hopeless, death usually occurring before twelve to eighteen months have passed. There have been isolated cases, however, of persons with proved cancer of the large bowel who have survived two, three and even four years after refusal of surgical treatment.

The degree of malignancy and the presence or absence of local regional spread are of paramount importance in determining the prognosis. Rankin and Olson[15] (table 2) collected a series of 453 cancers of the colon and compared the degree of malignancy with nodal involvement and percentage of five year cures. Comparison of the percentage of nodal involvement within the individual grades revealed that in grade 1, 28 per cent of the specimens were from patients with involvement of nodes; in grade 2, 30 per cent; in grade 3, 36 per cent, and in grade 4, 53 per cent. The percentage of five year cures in patients with nodal involvement were as follows: grade 1, 47 per cent; grade 2, 41 per cent; grade 3, 15 per cent, and grade 4, 25 per cent. In patients with no involvement of the nodes the percentage of five year cures was as follows: grade 1, 72 per cent; grade 2, 60 per cent; grade 3, 54 per cent, and grade 4, 36 per cent. From these figures we obtain the following facts: (1) the higher the grade of malignancy, the greater the tendency to metastasize, and (2) the prognosis of patients without nodal involvement is considerably better than that of those with nodal involvement.

Colcock [16] has recently reported a series of 38 patients who had a resection of the colon for carcinoma ten or more years previously and who were free of local and regional metastases at the time of operative intervention. Subsequent pathologic examination revealed no involvement of lymph nodes. Of this group he reports a 64.3 per cent five year survival rate and a ten year survival rate of 57.1 per cent. Twenty-seven patients with involvement of adjacent structures of lymph nodes had a five year survival rate of 15 per cent and a ten year survival rate of 11 per cent.

In a study of 173 patients with carcinoma of the colon, Coller and Vaughan [17] found that 36 per cent presented a spread of the lesion that precluded cure, while in 64 per cent of the patients the carcinoma was still limited to the original lesion and the adjacent lymph nodes, in which group there was a chance of cure by surgical treatment. The mortality of treatment in this group was small (0.8 per cent), while the overall mortality of extensive resection and palliative operations in the eventually hopeless group was much larger (4.2 per cent). In short the diagnostic phase of treatment lags far behind its technical aspects.

TABLE 2.—*Grade of Cancer in Relation to Involvement of Lymph Nodes (Rankin and Olson [15])*

	Grade			
	1	2	3	4
With nodal involvement (147 specimens)				
Incidence, %	11	55	23	11
Average postoperative life of patients with recurrence, months	24.6	19	14.1	14
Five year cures, %	47	41	15	25
Without nodal involvement (306 specimens)				
Incidence, %	16	63	16	5
Average postoperative life of patients with recurrence, months	34.4	27.7	19.6	15.6
Five year cures, %	72	60	54	36

Age must be considered as a factor in the prognosis. As in cancers of other parts of the body, the younger the patient the more rapidly the lesion tends to grow and the earlier it metastasizes. Provided that the cardiovascular system is reasonably sound and that body tissues are in a fair state of preservation, resection of cancer of the colon in the older age groups is without undue risk.

Anemia is of no prognostic significance in cancer of the right half of the colon. In our experience, however, patients with carcinoma of the left half of the colon with hemoglobin levels of less than 70 per cent were not resectable in 67.8 per cent of cases.

Weight loss is not of reliable prognostic import in our experience. One patient in our series had lost 100 pounds (45.8 Kg.) over a period of eighteen months due to carcinoma of the splenic flexure. This lesion was completely resectable, and there were no local or regional metastases.

14. Jones, D. F.: Malignant Disease of the Rectum, in Nelson Loose Leaf Living Surgery, New York, Thos. Nelson & Sons, 1929, vol. 5, p. 219.
15. Rankin, F. W., and Olson, P. F.: The Hopeful Prognosis in Cases of Carcinoma of the Colon, Surg., Gynec. & Obst. **56**: 366, 1933.
16. Colcock, B. F.: Prognosis in Carcinoma of the Colon and Rectum, Surg., Gynec. & Obst. **85**: 8, 1947.
17. Coller, F. A., and Vaughan, H. H.: Treatment of Carcinoma of the Colon, Ann. Surg. **121**: 395, 1945.

Carcinoma of the right half of the colon apparently has a slightly better prognosis than does involvement of the left side. The reason for this is not clear, except that it is possible to remove a larger node-bearing area of mesentery more easily on the right than on the left.

Duration of symptoms is a most difficult yardstick to gage prognosis, because the cancer may be present for a considerable period of time before making its presence known. In general, however, it may be stated that cancers of the colon causing symptoms which have persisted for a year or more are, in the great majority of cases, without much hope of cure.

TREATMENT

Until such time as more adequate therapeutic measures are available, surgery is the treatment of choice for all cancers of the colon. In our experience roentgen therapy offers nothing in the treatment of adenocarcinoma of the colon. The earliest operations for carcinoma were for decompression of an obstructed colon. Cecostomy and retroperitoneal colostomy were the methods originally used. Later, attempts at resection and primary anastomosis were attempted with disastrous results. The mortality rate of this approach at that time was prohibitive, and eventually exteriorization procedures were practiced.

Several factors were responsible for the poor results of immediate resection and primary anastomosis: the patients were usually in a state of chronic malnutrition; the colon contained feces in which were an infinite number of organisms capable of producing a serious or lethal peritonitis; the sharply segmental arrangement of blood vessels of the colon demanded special attention to the blood supply of the approximated ends where anastomosis was made, and finally, the dangers of distention and the principles of decompression were not appreciated.

Several factors militated against total acceptance of the exteriorization operations: (1) the necessity of several operative procedures and prolonged hospitalization; (2) the discomfort and mental distress of abdominal fecal evacuations; (3) the questionable adequacy of removal of the lymph-node-bearing area and bowel adjacent to the growth, and (4) the high incidence of complications such as infections and disruptions of the wound, persistent fecal fistulas and subsequent incisional hernias.

During the past several years there has been a tendency in many clinics to return to the one stage procedure. This has been due to the advent of the sulfonamide drugs and other antibiotics, the ingestion of which has diminished the number of organisms in the contents of the colon and has minimized the virulence of those that remain. There is a better knowledge of the effects of distention and of the methods of correcting it by decompression before resection is carried out. At our hospital during the past seven years, the great majority of patients treated for cancer of the colon, in whom the lesion was resectable, have had one or two stage resections and primary anastomosis. Other factors that have been important in permitting a return to primary anastomosis are: (1) correction of states of malnutrition, (2) better understanding of fluid and electrolyte balance, (3) free use of blood and blood substitutes, (4) improved anesthesia and (5) the use of antibiotics.

Constricting lesions of the colon, particularly on the left, may give rise to intestinal obstruction with tremendous distention of the colon if the ileocecal valve is functionating. The portion of the bowel involved by distention is well shown by a scout film of the abdomen. There is seldom nausea and vomiting under these circumstances, but one fears perforation of the cecum at any moment. This is a true and urgent surgical emergency, and the colon proximal to the obstructing lesion must be decompressed immediately by cecostomy or colostomy lest perforation and the attendant peritonitis supervene. In other cases with obstruction of the colon in the presence of an incompetent ileocecal valve, there will occur dilatation of the ileum with reverse peristalsis, nausea and vomiting. Under these circumstances decompression by the long or short tube will also be necessary. Seldom can the colon be decompressed by the use of any tubes introduced from the upper end of the gastrointestinal tract. This may be helpful in managing the condition, but it must be insisted on that in every instance in which there is obstruction of the colon with proximal distention a vent must be provided.

A critical review of 340 patients with cancer of the colon treated by operative methods in our clinic has been made. In 209 cases (61.5 per cent) the disease was limited to the original tumor with or without involvement of the lymph nodes. Resection was carried out with hope for cure on this group. In 131 cases (38.5 per cent) there was a distant spread of the disease to the liver or elsewhere. Resection of the primary lesion was effected in 90 cases (26 per cent) for palliation but without chance of cure. Thus, in 299 patients (87.9 per cent) the original lesion was resectable for cure or palliation. In the patients in whom the disease was too far advanced for resection other palliative procedures were carried out, such as decompression for obstruction and drainage for peritonitis, with small chance at palliation and no chance of cure. After resection primary anastomosis was carried out in a large percentage of cases, exteriorization being used in only 6.2 per cent of cases.

The overall mortality of patients treated for carcinoma of the colon was 8.5 per cent. The cause of death is largely due to terminal complications of the disease, such as massive metastasis of the liver and peritonitis from perforation. The mortality of resection in the patients in which cancer was left behind in the liver or elsewhere was 4.7 per cent. The mortality of resection in patients in which the cancer was limited to the bowel or to the adjacent lymph nodes was 1.9 per cent. The cure rates have been indicated under prognosis.

In short, the results of early surgical treatment are good. The poor late results are due to an advanced and hopeless spread of the disease, not due to poor technical methods of treatment.

With primary anastomosis there is a definite drop in morbidity. In obstructive resections the average postoperative morbidity as regards hospitalization has been 55.9 days. On the other hand, patients undergoing one stage resection with closed end to end anastomosis have had an average of 17.2 days in the hospital after operation. Similarly, patients subjected to one stage resection with open anastomosis have had an average of 27.4 postoperative hospital days. Longer

hospitalization in cases with open anastomosis has been ascribed to a greater number of wound infections in this group. From the patient's point of view the economic advantage of fewer hospital days is highly desirable as long as no sacrifice of possibility of cure or greater mortality risk has been entailed.

No one factor has been responsible for the improvement in treatment of cancer of the colon. Attention to the painstaking details of preoperative and postoperative care, the attempt to make the patient as safe for surgical intervention as possible and the augmented number of trained surgeons utilizing the operative approach with which they have become most skilful have played a great part in the reduction of morbidity and mortality rates of surgically treated cancer of the colon.

SUMMARY

Cancer is the most commonly observed tumor of the colon. The incidence is on the increase because of improvement in our diagnostic facilities, a larger number of persons entering the older age groups and increased alertness on the part of the members of the medical profession and the laity.

There is no definite clinical picture typical of cancer of the large bowel, but more than 97 per cent of these patients have vague symptoms of indigestion, abdominal distress, bleeding from the rectum or a change in bowel habits.

Every patient with the preceding suggestive symptoms should have a sigmoidoscopic examination and a barium enema. If there is any suspicion that the colon may be involved the barium enema should precede the examination of the upper portion of the gastrointestinal tract. In our clinic only 8 of 100 patients examined by means of the barium enema have demonstrable lesions. It is not a source of disappointment when the sigmoidoscopic and barium enema examinations are negative. The greater the percentage of negative examinations the higher will be the chance of early diagnosis of lesions of the colon. Every patient with hemorrhoids should have a sigmoidoscopic examination and radiographic study of the colon. Polyps should be removed and frequent examinations of the rectum and colon should be made, since they continue to develop and are always a precancerous lesion with a high chance of becoming cancerous.

The results of surgical treatment vary directly with the stage and grade of the tumors when first seen. About 40 per cent are beyond reach of cure. The term operability is of no importance in relation to final results. The status of the disease is all important in relation to chance of cure. In those patients with lesions so extensive as to preclude cure, palliation of a worth while sort can be secured by operative methods which in many cases restore the colon to normal function. The technics of operation will vary with the local conditions and with the experience and inclination of the surgeon. Further improvement in the prognosis of cancer of the colon lies principally in earlier diagnosis. Improvement in surgical management will necessarily have to be paralleled by earlier identification of cancer of the colon before satisfactory management of this disease will be achieved. Complete and thorough periodic physical examination offers the best chance to detect carcinoma of the colon early in its curable stage.

THE FOURTH INTERNATIONAL CANCER RESEARCH CONGRESS

St. Louis, September 2-7, 1947

E. V. COWDRY, Ph.D.*
St. Louis

Cancer is a world problem investigated by specialists in many lines who see it differently through the eyes of their own experience as chemists, radiologists, surgeons, pathologists or geneticists. All, however, have the single ultimate goal of learning how to overcome cancer and the public is aroused as never before, thanks principally in this country to the American Cancer Society. Consider here briefly a few of the reports of progress dealing primarily with causation, prevention, diagnosis and treatment without reference to many advances in the cytology and chemistry of cancer. This drastic restriction means that many of the four hundred and eleven investigators who presented their results at the Congress and thereby helped to make it a success are not mentioned by name.

The total registered attendance was eight hundred and sixteen. A description of the organization and conduct of the Congress will soon appear in *Science*. The Transactions will be published in Belgium in *Acta* under the editorship of Professor J. H. Maisin of the University of Louvain.

CAUSATION

A special session, led by J. J. Bittner of Minneapolis, was devoted to the milk factor in the production of mammary cancer of mice, but no evidence either pro or con was brought forward on the possible causation of cancer of the breast in women by any factor in mother's milk. This milk factor in mice seems to be a virus. The relationship of viruses to tumors was discussed among others by Peyton Rous, New York. C. G. Grand of New York reported the purification and physical properties of a substance said to be the active agent of Hodgkin's disease. Evidence is, however, lacking that this or any other malignant neoplastic disease is infectious from person to person. Excitement was caused by undue newspaper publicity of a paper by R. Ashbel of Jerusalem on experimental leprosy and cancer; members of the families of cancer patients asked by telephone whether they might get leprosy.

I. Hieger of London, England, presented interesting observations on the carcinogenic activity of preparations rich in cholesterol. He found in his experiments that "cholesterol is in fact a slow carcinogen, particularly in the presence of other facilitating lipids, and in the absence of inhibiting factors"; that "commercial cholesterol . . . contains a small amount of an unknown but potent carcinogen," and that "cholesterol-rich fractions from human tissues (liver, lung, kidney, bile, etc.) . . . all contain . . . the unknown carcinogen." This is important because it sheds light on carcinogens of metabolic origin about which we are poorly informed and which may be chiefly responsible for some cancers. A few of these may be hormones. Alexander Symeonides of Athens, Greece, reported a high incidence of tumors of the mammary gland in mice which had received heavy doses of progesterone.

Ignacio G. Guzman of Mexico, D. F., Mexico, was chairman of the General Session on Carcinogens. A special session, led by R. D. Evans of Cambridge, Mass., dealt with carcinogenic radiations, gamma rays, roent-

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gen rays, plutonium, and so forth. The list of physical agents involved in cancer etiology includes sunlight. Ultraviolet radiation was reported on by H. P. Rusch of Madison, Wis. Cosmic radiation received close attention in a paper by F. H. J. Figge, of Baltimore. Among chemicals even anthraquinone and rhubarb were described as carcinogenic in some animal experiments by I. Sun Yun of Seoul, Korea.

L. C. Strong of New Haven, Conn., described the production of seventy-nine germinal mutations in mice by injections of methylcholanthrene. He said that "evidence is accumulating that most if not all of these genetic changes are point mutations and further that they are accompanied usually by alterations in susceptibility to tumors induced by methylcholanthrene. Strong also called attention to the "significant fact that all the physical and chemical means available for the induction of germinal mutations will also influence the origin of cancer." Consequently mutations loom larger than before as probable means of cancer production.

But difference of opinion developed on the degree of directness of action of such physical and chemical carcinogens on cells. A. Lacassagne of Paris, France, described experiments with angular benzacridines which allowed "speculation that cancerization requires the fixation upon a particular place in the cell of a certain number of toxic molecules" and which gave support to the new electronic theory of cancerization presented by Alberte Pullman and Bernard Pullman, likewise of Paris.

Others expressed the view that the carcinogens do not act directly on the cells but influence them by changing their environments. Thus Orr, of Leeds, England, said that "The balance of evidence favours the view that carcinogens act by so altering the environment of cells as to favour the breeding out of malignant types." Alexander Haddow and his associates in London, England, expressed somewhat the same idea of "tumour production being conceived as an adaptive reaction, or escape-mechanism of a special kind, to a highly characteristic or even specific interference with the growth of normal cells."

Predisposition to cancer was considered important by several of the speakers. Madge T. Macklin of Columbus, Ohio, stated that "male relatives of breast cancer patients who have cancer appear to have prostatic cancer in greater percentages than do male relatives with cancer who are related to patients with cancer elsewhere than in the breast." Edward C. Reifenstein Jr. and his associates of New York marshalled considerable evidence "that patients with cancer have disordered function of the adrenal cortex." C. P. Rhoads of New York emphasized the occurrence of many metabolic abnormalities in patients with certain forms of cancer. Whole groups of papers were devoted to hormones and cancer and to nutrition in relation to cancer. V. R. Khanolkar and others from Bombay, India, noted mild deficiency in vitamin B complex in patients with oral cancer. Why the presence of one cancer is often linked with the later occurrence of other primary cancers is a mystery. Instructive papers on such "multiple cancers" were read by Paul Desaive of Liége, Belgium, and by Charles Phillips and R. W. Shirey of Temple, Texas. Evidently many conditions of cell life, whether hereditary or acquired, influence carcinogenesis. It is likely that other conditions may promote resistance instead of predisposition.

Not only is it a case of carcinogen acting directly or indirectly on susceptible cells which are or are not predisposed to it, but the effect depends also on what happens after exposure to carcinogen. I. Berenblum of Oxford reported extension of previous work on the "epicarcinogenic" action of croton oil. This agent, and there may be many like it, though itself not a carcinogen, definitely augments the action of a previously applied carcinogen. Peyton Rous and William F. Friedewald of New York presented experiments showing an example of latent neoplastic epidermal cells of rabbits giving rise to tumors when stimulated by mechanical injury. These were well supplemented by Lucien Mallet of Paris, France, in his presentation of "The Hibernation of the Cancer Cell" in patients. Indeed, a special session was provided for etiology under L. Kreyberg of Oslo, Norway.

PREVENTION

The general consensus at the Congress was that complete protection against cancer is impossible of realization. There are so many carcinogens both of external and internal origin that they cannot all be avoided, and the fluid environments and susceptibilities of body cells are highly diversified. However, in occupations in which the hazard of exposure to particular substances is especially great, protection can be rendered more effective by the prophylactic measures of avoidance outlined in detail by W. C. Hueper of New York. Hermann Lisco, Austin M. Brues and others of Chicago gave a special exhibit of the hazards and carcinogenic effects of fission products and of plutonium. To correct some predisposing factors, other than heredity, may be feasible, as for instance metabolic disorders, vitamin deficiencies and so forth.

Specifically to prevent cancer is almost out of the question. Alexander Lipschutz and collaborators of Santiago, Chile, described new experiments on the antitumorigenic action of steroid hormones. Hugh J. Creech of Philadelphia reported that the injection of antiserums to protein-carcinogen conjugates gives some protection to rabbits and mice against the same carcinogens. The trouble is that in man no single chemical carcinogen operates sufficiently uniformly to justify such immunization on a large scale even if it were effective. Though 2,3-dimercaptopropanol (BAL) is effective against several heavy metals, we can hardly hope that a single substance will invalidate any substantial number of chemical carcinogens.

Early recognition and treatment of precancerous lesions is indicated as the most feasible means of prevention. Such lesions, or conditions, were described in many parts of the body epidermis (Hsu Mu Liang, Shanghai, China), liver (Antonio Cantero, Montreal; A. D. Glinos and N. L. R. Bucher, Boston), small intestine (Harold L. Stewart and Egon Lorenz, Bethesda), and cervix (J. Ernest Ayre, Montreal, Canada).

DIAGNOSIS

The problem of early diagnosis becomes of prime consequence because it is impossible to escape most carcinogens and because small precancerous lesions are seldom recognizable clinically except at exposed surfaces.

John R. McDonald and Lewis B. Woolner of Rochester, Minn., impelled by the need for more prompt diagnosis of cancer of the lung than is possible by routine methods, advised examination of sputum for cancer cells by a new smear technic. The value of vaginal smears in early diagnosis of uterine and cervical cancer was emphasized in a report by E. M. Robertson of Kingston, Ontario, Canada, while the technic

was shown in a moving picture by Clair Folsome of Raritan.

Considerable attention was attracted by a paper by Louis Herly of New York proposing a simple diagnostic blood test for cancer. Pronounced differences were reported by him between the fluorescence in ultraviolet light of the serums from cancer patients and those from otherwise diseased and normal persons. Howard H. Beard and his associates of Chicago described a biologic diagnostic test for cancer which is based on the results of the intraperitoneal injection of rats with specially prepared samples of urine. The biologic assessment of malignant tumors by heterologous intraocular transplantation was discussed by Harry S. N. Greene of New Haven, Conn. Demonstrations were made of these three types of diagnostic tests. M. Polak of Buenos Aires, Argentina, presided over a special session on transplantation and tissue culture.

Several other tests were reported as of contributory value in reaching a diagnosis of cancer. K. Dobriner of New York reported the isolation of a compound, Δ^9-etiocholenolone, chiefly in the urine of cancer patients and only rarely in the urine of normal subjects. Maurice M. Black of New York stated that the reducing power of the blood serums of patients with cancer differed from that of those suffering from nonmalignant conditions but did not claim that this by itself is diagnostic. M. E. Sano and M. Spiegel-Adolf of Philadelphia made detailed ultraspectrophotometric studies of extracts of normal human tissues and tumors and obtained results which they considered of interest from the diagnostic point of view.

In summary, it is clear that new diagnostic tests are most needed for cancers which remain hidden, or are undiagnosable, when the search is made by technics now in use. The microscopic examination of smears is said to be in this category, but it must be done by experts. When the smears contain only single, isolated cells the pathologist is handicapped by absence of data on cellular arrangement. The biologic assessment by transplantation of suspected growths is possible for extremely small lesions. Again, however, it is a matter for experts. With decrease in size to microscopic dimensions of the group of malignant cells likelihood of the creation by them of detectable differences in body fluids, or extracts, would appear also to decrease.

TREATMENT

Logically the search for effective treatment by means other than early excision and/or radiation should be based on knowledge of the differences between malignant cells and their normal precursors because these differences may supply clues to the specific vulnerability of the cancer cells or to means whereby they can be controlled. Many investigators at the Congress had devoted themselves for years to exploration of this essential background.

R. Korteweg of Amsterdam, Netherlands, presided over a special session on enzymes. Significant were the observations of J. P. Greenstein of Bethesda, Md., that "normal tissues are functionally differentiated from each other and each tissue possesses a unique pattern or 'spectrum' of enzymatic catalysis. Malignant tissues have generally lost the specialized functional pattern of the original tissues of their own origin and tend to converge toward a type of functionally undifferentiated tissue common to all." The more properties which cancer cells of different origins possess in common, the more likely they are to yield to similar treatments. It might be worth while to search for similarities in malignant tumors notwithstanding the individuality which they so frequently exhibit.

Van R. Potter of Madison, Wis., said that his "studies on the oxidation of oxalacetic acid show that this step in the complete combustion of pyruvic acid via the Krebs cycle occurs in the tissues that are high in the succinic oxidase system but is low or absent in various types of cancer tissue." Potter's theory of cancer may provide leads to experimental treatment.

Comparison of cancers with the particular tissues from which they arose revealed many quantitative differences between the two in activity of adenylpyrophosphatase (E. Roberts and C. Carruthers, St. Louis), succinic dehydrogenase (P. Rondoni, Milan, Italy), cytochrome c (C. Carruthers and V. Suntzeff, St. Louis), cathepsins (M. E. Maver, Bethesda). Restoration of normal enzymatic patterns may of course be an extraordinarily difficult task. Enzyme inhibitors will be mentioned later.

The known decrease in calcium content in some cancers, compared with their cells of origin, seems clarified. Lansing and Rosenthal of St. Louis measured the ratio between diffusible and nondiffusible calcium. The sharp decrease in total calcium is accompanied by reduction in the proportion of diffusible calcium in epidermal carcinogenesis. This is of particular interest in view of results by Chambers and associates of New York. These showed that a fluid environment deficient in calcium causes dissolution of the cement substance between cells. Consequently the calcium decrease may promote cancer invasiveness. In experiments on cancer therapy in animals one should therefore try to reestablish not only the normal calcium level but the ratio of free to bound calcium characteristic of the tissue of origin of the cancer. Similarly the decrease in zinc content of leukocytes in myelogenous leukemia, described by J. G. Gibson and his associates of Boston, suggests efforts to restore the normal amounts of zinc.

In the production of hepatomas by 1:2:5:6 dibenzanthracene the ratio between pentose and desoxypentose nucleic acids is increased according to R. J. C. Harris and J. F. Thomas of London, England. Localization of nucleic acids in different parts of tumors of the liver, as well as in different parts of individual cells, was discussed by R. E. Stowell of St. Louis. Results of the ultraviolet absorption spectrographic examination of protein components of cells were presented by T. Caspersson of Stockholm, Sweden. Eugene Roberts with associates in St. Louis and Indianapolis made a preliminary report on bioassays of amino acids of epidermis of mice during carcinogenesis induced by methylcholanthrene. The resulting cancers contained relatively less arginine, cystine, histidine and glutamic acid and relatively more isoleucine, lysine and methionine than did normal epidermis. L. A. Elson of London, England, reported that Walker rat sarcoma 256 is slightly inhibited on a 20 per cent protein diet by 1:2:5:6 dibenzanthracene and promptly and effectively inhibited by the same treatment when the diet contains only 10 per cent protein. But it would be tragic to give cancer patients less protein. The problem is complicated, involving the kind of protein, the calcium protein binding already alluded to, in the background of the fact that in terminal cancer there is great emaciation, the body starving while the cancer grows. Yet in informal discussion the opinion was expressed that young adults in concentration camps starved for years are likely to have a lower later incidence of cancer than others not so treated. Many other interest-

ing papers were read in the Special Session on Nutrition under the chairmanship of A. Tannenbaum.

The rationale back of attempts to treat cancer with hormones is the fact that the cells of many cancers of the endocrines react in some measure according to their original responsiveness to hormone stimulation. It is thought that they can be slowed down by reducing this stimulation. Hope here is in the retention, not in the loss, of certain properties of their normal ancestors. The general problem was considered by Charles Huggins of Chicago. I. T. Nathanson of Boston reported temporary relief in cases of advanced cancer of the breast in males to result from orchiectomy and in females from administration of estrogenic hormones. The role of roentgen castration in 112 cases of mammary carcinoma was presented by Tevpik Berkman of Ankara, Turkey, while Antonio Prudente of São Paulo, Brazil, described testosterone propionate in the treatment of mammary cancer. A. Cantarow, K. E. Paschkis and J. Stasney of Philadelphia observed that the giving of thiouracil with testosterone decreases the extent and incidence of cystic and neoplastic hepatic lesions produced by 2-acetaminofluorene more than does the administration of testosterone alone. Sex hormone antagonism in the control of carcinoma of the genital tract was stressed by Roy Hertz of Bethesda, Md. It is remarkable how in certain circumstances some steroid hormones inhibit cancers while in other conditions they produce cancers. Yet this is but an example of the cancer-producing and cancer-inhibiting properties of many hydrocarbons, nitrogen mustards and several kinds of radiation.

Tissue extracts constitute another group of agents tested for possible therapeutic value. J. C. Fardon and associates of Cincinnati reported decrease in oxygen uptake as a response of *dbrd* mouse tumor cells to deproteinized aqueous extracts of beef spleen. J. C. Amersbach of New York and L. G. Nutini of Cincinnati announced successful treatment of some epidermal cancers by injection of extracts of human spleen and liver and of beef and lamb liver. J. L. Williams and C. L. Walters of Middlesex, England, described the successful use of the acid alcoholic extract of parathyroid glands, known as H 11, in the treatment of 6 cases of cancer.

Other investigators concerned themselves with evaluating antiserums produced in animals by the injection of organ extracts. Thus A. Pellegrino, M. Polak and C. Waldi of Buenos Aires, Argentina, described the focal qualitative and quantitative tissue changes resulting in animals from injections of the Bogomolets antireticular cytotoxic serum (ACS) prepared from rabbit's blood. C. M. Pomerat of Galveston, Texas, found that the cytotoxic factor is contained in the globulin fraction and described the manufacture of an anti-rat spleen serum of high potency against cultures of rat sarcoma 319. Evidently the spleen figures prominently in studies of this sort. The reason may be that because of the high permeability of its blood vessels the tissue fluid of this organ accepts more than any other a wide variety of materials in the circulation.

As was to be expected, those at the Congress heard much about antibiotics as possible means of cancer therapy. Herman Du Buy and co-workers at Bethesda, Md., made detailed studies of the effect of several antibiotics and stated that the most potent antibiotic inhibitor of tumor respiration and glycolysis is a "chemically unidentified impurity present in all samples of commercial amorphous penicillin and crude penicillin cultures tested." C. C. Stock and others of New York, experimenting with tissue cultures and mice, observed "that some cultures of Aspergilli and Penicillia produce materials with a detrimental effect on the viability and growth of sarcoma 180, the Harding-Passey melanoma and upon spontaneous mammary adenocarcinoma." N. T. Werthessen of San Antonio, Texas, noticed that Bagg rat lymphosarcoma transplants were killed off by an infection due to type II pneumococci and found that a cell-free filtrate of old cultures of these organisms possessed the antilymphosarcoma property to a marked degree.

"Three different strains of *Trypanosoma Cruzi* significantly retarded the growth of three transplantable mouse tumors (carcinoma 119, sarcoma 37 and C3H mammary adenocarcinoma)" in experiments by T. S. Hauschka of Philadelphia, "but when the infections were checked the previously inhibited tumors grew again." "KR," advocated by Klyueva and Roskin, produced by Hauschka from Trypanosoma Cruzi, yielded no tumor regressions, and it was explained that clinical tests are not indicated. M. J. Shear of Bethesda, Md., after a wide survey of antibiotics, said that "only the specific polysaccharide of B. prodigiosus has reached the stage of study in patients."

Progress in the synthesis of two glutamylglutamic acids was reported by B. L. Hutchings of Pearl River in important relation to encouraging results in the treatment of cancer obtained by R. Lewisohn and co-workers of New York, using the compound commonly known as folic acid, which in crude form was originally reported in aerobic cultures of an unclassified bacterium and is essential to the growth of Lactobacillus casei. This is why folic acid has been called a vitamin (B_c).

Reference now may be made to the experimental treatment of cancer by various chemicals. The interesting discovery was noted by Herman Du Buy, Dean Burk and associates of Bethesda, Md., that "cobalt inhibits the respiration of tumors and embryonic tissues more than that of other adult tissues tested over the concentration range of one to twenty parts per million." It was argued that glycolytic enzyme inhibitors might be helpful by Israel S. Kleiner and associates of New York. They therefore employed sodium fluoride, iodoacetic acid, malonic acid and sodium azide in the treatment of various types of human malignant neoplastic diseases with, they believed, beneficial therapeutic effects.

In spontaneous leukemias of mice, urethane was reported by L. W. Law of Bar Harbor, Maine, to give relief from symptoms of dyspnea, to significantly decrease the size of the thymus and to prolong life. According to I. ApThomas and E. Paterson of Manchester, England, urethane offers a useful alternative to radiation in the treatment of chronic leukemias. It decreases the size of lymph nodes and spleen but is not a cure. The chloroethylamines have an effect on mitosis similar to that of urethane, so E. Boyland and co-workers of London tried nitrogen mustard on experimental and human cancers. "Favorable effects" were described by them on the rat Walker carcinoma and on C3H mouse lymphosarcoma. They also reported that "cases of bronchogenic carcinoma treated with chlorethylamines have shown evidence of clinical improvement including relief of pain and dyspnea in the majority of patients, although actual reduction in tumor size is not common."

The nitrogen mustards received careful attention at the Congress. An interesting experiment by D. A. Karnofsky and others of New York showed that several nitrogen mustards killed sarcoma 180 in chick embryos without affecting their growth. Frank Garai and Harry Klingel, likewise of New York, observed that a nitrogen mustard derivative, methyl morpholine, brought about first an enlargement, then a shrinkage and sloughing away of the same sarcoma in mice. A partially resected human Schmincke tumor completely regressed under this treatment. James W. Hawkins and Sidney Farber of Boston reported temporary betterment to result from nitrogen mustard treatment of 3 children with a rhabdomyosarcoma, a neuroblastoma and a Ewing tumor. A. J. Erslev and associates of New York clinically evaluated a nitrogen mustard derivative (S K 136) in the treatment of leukemia: "no apparent benefit in two cases of chronic lymphatic leukemia"; occasionally promising in acute leukemia; "in chronic myelogenous leukemia, although not curative, it appears to be a useful tool in the armamentarium of the clinician."

M. J. Shear of Bethesda, Md., systematically explained the trends in experimental tumor chemotherapy. The National Cancer Institute of the United States Public Health Service and cooperating institutions have a long term comprehensive program. "Of the 1,200 compounds on hand, some 500 have been put through the first screening. At the present time, about a dozen of these have given sufficient gross or microscopic evidence of effects on tumor tissue to warrant further study." Among these are emetine and podophyllin, but none except the polysaccharide of B. prodigiosus (already mentioned) has reached the stage of study in patients. Three papers at the Congress were devoted to the remarkable and unexpected properties of podophyllin and/or its products.

Experimental treatment of cancer with hormones, tissue extracts, antiserums, antibiotics and chemicals has been highlighted in this incomplete summary because it is believed that something effective other than excision or radiation and the use of routine methods for the relief of pain must be discovered. This must not be taken to mean that improvements in these standard technics were not reported at the Congress. A treatment of rectosigmoid cancer without colostomy was presented by F. F. Carranza of Buenos Aires, Argentina, and a chemosurgical technic was described by F. E. Mohs of Madison, Wis., to mention only two of many papers. Several operations were illustrated by motion pictures. And at a general session, J. J. Morton of Rochester, N. Y., spoke on the surgery of cancer.

At another general session, A. Schinz of Zurich, Switzerland, discussed recent advances in the radiation treatment of cancer. The technic of the teleradium treatment of intrinsic carcinoma of the larynx was given by M. Lederman of London, England. Perhaps the newest work related to the construction of high frequency radiation generators. One developing energy in the 300,000,000 volt range was described by D. W. Kerst of Urbana, Ill. L. S. Skaggs of Chicago outlined the production and characteristics of a fast electron beam, while E. M. Uhlman, also of Chicago, gave the principles of fast electron therapy in cancer. In general radioactive isotopes have proved disappointing in treatment of cancer. The radiation delivered depends on the uptake of the isotopes by the malignant cells. No means was reported at the Congress by which this can be increased, by which we can make for example a fibroblast take up as much radioiodine as a thyroid cell. However, radiation delivered by zirconium can be to some extent directed. In interesting experiments Ernest Dobson and others of Berkeley, Calif., obtained deposits of radiozirconium primarily in liver and spleen when given in colloid of relatively large particle size and primarily in the bone marrow and spleen when given in colloid of small particle size. In the latter case it was in large measure directed away from the liver and toward the bone marrow.

Encouraging were advances in the development of two new pain killing drugs, "metopon hydrochloride" (methyldihydromorphinone hydrochloride) and "amidone" (6-dimethylamino-4,4-diphenyl-3-heptanone) reported by N. B. Eddy, of Bethesda, Md. "Metopon" is a morphine derivative but of greater analgesic effectiveness than morphine, practically devoid of emetic effect; it can be given by mouth. It is recommended by the Committee on Drug Addiction for cancer patients. "Amidone" chemically bears no resemblance to morphine. Yet its analgesic effectiveness is greater than that of morphine. When administered hypodermically "amidone" is less emetic than morphine. It is still in the experimental stage, but extensive use with cancer patients was described.

Really impressive at the Congress was the fact that cancer investigators came from far and near, many of them firmly convinced that they had secured promising results in the treatment of experimental cancer in animals. Some had gone further and, on the basis of animal experimentation, had cautiously extended their studies to cancer in human beings, but no one was willing to advocate, without many qualifications, any new treatment for human cancer to displace surgical excision and radiologic therapy. Reference was frequently made to temporary relief, occasionally to long-standing benefit and in rare instances to complete regression. Such information is valuable because the legion of patients with advanced cancer far beyond operative and radiologic aid should have some sort of palliative treatment plus the most effective analgesics.

Open rather than closed minds were in evidence. Antibiotics and other agents of possible therapeutic value were in some cases discovered almost by accident; but it was really in verification of the dictum that "chance favors the prepared mind." Some investigators showed a healthy disinclination to limit their tests to substances or agents which could be rationalized as probably useful. The policy of testing hundreds of possibilities in a mass attack was evident. A growing appreciation of urgency pervaded the Congress, of the feeling that we cannot delay attempts at treatment until the nature of the fundamental mechanism of the malignant transformation is discovered. It is easy to recall several instances of the cure of disease being found before the cause.

It was also pleasing to note examples of developing team work between cancer research institutions. Obviously great impetus is to be derived from this cooperation, when, as often happens, some aspect of a research project can be better advanced in another institution than in the one in which it is chiefly centered.

A noteworthy achievement of the Congress was the establishment of an International Cancer Research Commission within the framework of the Union Inter-

nationale Contre le Cancer. The details of organization of this Commission were unanimously approved by representatives of the forty nations attending the Congress. Twenty other nations expressed great interest, and it is hoped that they soon will join. The United States Department of State has approved a statement regarding the Commission and will transmit it to all nations originally invited to send delegates to the Congress. The Chairman of this new International Cancer Research Commission is Dr. Ignacio Millan, 69 Avenida Vera Cruz, México, D. F., Mexico, and for the first three years headquarters will be in Mexico.

Clinical Notes, Suggestions and New Instruments

TRYPARSAMIDE OPTIC NEURITIS TREATED BY 2,3 DIMERCAPTOPROPANOL (BAL)

SIDNEY FRIEDENBERG, M.D.
Camden, N. J.

2,3 Dimercaptopropanol (BAL, British Anti-Lewisite) is now recognized as a specific drug in the treatment of arsenical poisoning. Many reports in the past two years have attested its value in the treatment of exfoliative dermatitis, blood dyscrasias and "hemorrhagic encephalitis" following the use of the trivalent arsenicals in the treatment of syphilis.[1] A search of the recent literature reveals no reports of tryparsamide optic neuritis treated with BAL. This is a report of the first case of tryparsamide optic neuritis treated successfully with BAL.

The pharmacologic rationale for the use of BAL in arsenical (or mercury) poisoning is based on the theory that arsenicals are toxic because they block the functioning of physiologically essential chain groups within the cell by combining with them. The sulfhydryl grouping (-SH) is most vulnerable. BAL, a dithiol, competes successfully for the arsenic with the sulfhydryl bond, forms a stable compound with the arsenic and is rapidly excreted in the urine.[2]

In cases of severe intoxication Eagle[3] has recommended giving 3 mg. of BAL per kilogram of body weight intramuscularly every four hours, giving six injections the first day, four the second, and two daily thereafter. The Council on Pharmacy and Chemistry[1] has recommended the same dosage to be given every four hours for two days, four the third, and twice daily thereafter for ten days or until complete recovery. A practical point to remember is that each ampule of 2,3 dimercaptopropanol[4] contains 450 mg. of the active drug,[5] while 300 mg. is considered the limit to be given at one time.

Toxic reactions from overdosage of BAL are subjective: anxiety, constriction in the chest and paresthesias of the extremities. Eagle[5] has not seen an organic toxic effect in any patient.

The use of BAL does not eliminate the necessity of adjuvant therapeutic measures; e. g., penicillin is necessary to combat the intercurrent infection in arsenical agranulocytosis.[1]

REPORT OF A CASE

F. B., a white man aged 49, was first seen on March 22, 1946 with the chief complaints of nocturnal enuresis and daily frequency. The onset had been gradual, about two months previously. His past medical history revealed that he had had a penile "sore" when a young man, treated for some six weeks with "shots" in the arm.

His pupils were unequal and reacted poorly to light, but did react in accommodation. The tendon reflexes were apparently normal, and vibratory sensation was present in the extremities although there was a suggestive Romberg sign. There was definite perineal anesthesia, and an enlarged bladder was palpable. The heart and lungs were normal.

The urine was normal. The Mazzini test elicited a positive reaction and the complement fixation test for syphilis (Wassermann) a strongly positive reaction. On April 9, 1946 the spinal fluid was examined: lymphocytes, 3 per cubic millimeter; Wassermann reaction, 1244, protein, 100 mg. per hundred cubic centimeters, and colloidal gold curve, 2444310000.

The diagnosis was tabes dorsalis with an atonic bladder accounting for his complaints.

Ten intramuscular injections of iodobismuthite sodium, 2 cc. each, were given weekly, after which he was hospitalized and a course of penicillin given. He received in eight days 3,960,000 units of penicillin. There was no reaction, febrile or otherwise, to the treatment.

During the following months there was a decrease in the amount of enuresis from a pint (473.2 cc.) of urine previously experienced to a few drops nightly. He complained, however, of a loss of libido.

From June until September he was given weekly injections of iodobismuthite sodium. Spinal fluid examination in September revealed: lymphocytes, 4 per cubic millimeter; globulin, doubtful; Wassermann reaction, 210, and colloidal gold curve 0000121000.

On October 18 he was given 0.7 Gm. of tryparsamide intravenously, and on October 25 1 Gm. of tryparsamide was given. Visual fields were found to be normal by Dr. George Dublin on October 17 and 22.

On October 27, two days following the last injection of tryparsamide, he returned complaining that he could not see the sidewalk when walking. A gross examination confirmed the loss of the inferior visual fields.

The same day he was placed on BAL therapy. The first two days he was given 300 mg. twice daily; the following eight days he was given 300 mg. daily with the exception of the fifth day, when 400 mg. was given. Several hours after this injection he complained of paresthesias in the left side of his neck and jaw. This lasted about one hour.

Visual fields during the course of therapy showed the extent of loss of vision on the ninth day of BAL therapy and the return of vision nine days after the therapy was stopped. Visual fields in May 1947 showed great improvement, and the patient himself had had no visual complaints since November 5, 1946, the last day of treatment with BAL, when the patient stated that his vision seemed normal except for occasional blurring.

COMMENT

The first symptoms of involvement of the optic nerves following tryparsamide therapy are a blurring or a shimmering of vision.[6] At this stage damage is transient.[7] However, when the form fields show constriction, this tends to be permanent[8] and may even progress to complete and permanent blindness.[9] Merritt and co-workers[6] stated that the visual fields are usually constricted in cases of tryparsamide toxic amblyopia and are usually stationary or regressive if no more tryparsamide is given.

In this patient the unusually rapid return of vision was probably due to the prompt use of BAL following his visual complaints.

SUMMARY

In a patient with tabes dorsalis given two small doses of tryparsamide, optic neuritis developed which was successfully treated with 2,3 dimercaptopropanol (BAL).

326 Cooper Street.

1. "BAL" (British Anti-Lewisite) in the Treatment of Arsenic and Mercury Poisoning, report of the Council on Pharmacy and Chemistry, J. A. M. A. **131**: 824 (July 6) 1946.
2. Reynolds, F. W., and Moore, J. E.: Ann. Int. Med. **78**: 5 (Nov.) 1946. Footnote 1.
3. Eagle, H.: J. Ven. Dis. Inform. **27**: 114 (May) 1946.
4. The drug is manufactured and supplied in this form under the name BAL by Hynson, Westcott and Dunning.
5. Eagle, H.: Personal communication to the author.
6. Merritt, H. H.; Adams, R. D., and Solomon, H. C.: Neurosyphilis, London, Oxford University Press, 1946.
7. Stokes, J. H.: Modern Clinical Syphilology, Philadelphia, W. B. Saunders Company, 1935.
8. Moore, J. E.: Modern Treatment of Syphilis, Springfield, Ill., Charles C Thomas, Publisher, 1943. Dublin, G.: Personal communication to the author.
9. Dattner, B.: Management of Neurosyphilis, New York, Grune & Stratton, Inc., 1944.

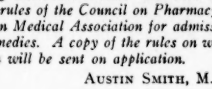
Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN SMITH, M.D., *Secretary.*

CHOLINE DIHYDROGEN CITRATE. — Trimethyl hydroxyethyl ammonium citrate. — The dihydrogen citrate of trimethyl ethanolammonium hydroxide.—$C_{11}H_{21}NO_8$. — M. W. 295.29. The structural formula of choline dihydrogen citrate may be represented as follows:



Actions and Uses.—Choline dihydrogen citrate has been used in the treatment of hepatic diseases associated with decided fatty infiltration. In the experimental animal it has been demonstrated that a fatty liver can be produced by a diet free of choline and that the fatty degeneration thus produced can be cured by the administration of choline. Clinical observations in human beings suffering from a variety of diseases of the liver have not been conclusive, but the results have been sufficiently promising to warrant trial of the agent in fatty degeneration and cirrhosis of the liver in conjunction with other recognized forms of therapy. However, the results of choline therapy in advanced fibrotic cirrhosis of the liver have been disappointing.

The normal diet contains large amounts of choline, and there is no valid evidence that a pathologic state due to choline deficiency exists in man. The possibility of such a deficiency seems unlikely because of the amount of choline present in most food stuffs. In addition, it has yet to be conclusively demonstrated that choline therapy is superior to an adequate diet in the treatment of liver disease.

Dosage.—Two to 3 Gm. of choline dihydrogen citrate (8 cc. to 12 cc. of the 25 per cent W/V syrup) in divided doses. Choline is always administered orally.

Tests and Standards.—

Choline dihydrogen citrate occurs as a white, crystalline, granular substance possessing an acid taste. It melts at 105 to 107.5 C. It is freely soluble in water, very slightly soluble in alcohol and practically insoluble in benzene, in chloroform and in ether. The *pH* of a 25 per cent solution is about 4.25.

Add 1 cc. of a 1 per cent solution of the choline salt to 2 cc. of cobaltous chloride solution (U. S. P. test solution diluted 1:25). Add 2 cc. of 2 per cent potassium ferrocyanide solution: an emerald-green color develops immediately.

Add 0.2 cc. of mercuric sulfate solution to 2 cc. of a 10 per cent solution of choline dihydrogen citrate. Heat the mixture to boiling and then add 5 drops of potassium permanganate: a precipitate develops with a slight yellow color.

Dissolve 0.5 Gm. of choline dihydrogen citrate in 2 cc. of water. Add the choline solution to 3 cc. of a saturated trinitrophenol solution. Allow the aqueous solution to slowly evaporate. Filter off the crystalline material and wash thoroughly with ether: the crystals melt from 245 to 251 C., with considerable decomposition.

Dissolve 0.5 Gm. of choline dihydrogen citrate in 2 cc. of water. Add to 1 cc. of the choline solution a few drops of phosphotungstic acid solution (U. S. P. test solution): a white, curdy precipitate occurs. Add to another 1 cc. portion of the choline solution a few drops of tannic acid solution (U. S. P. test solution): no precipitate should occur.

Dry about 0.5 Gm. of choline dihydrogen citrate, accurately weighed, in vacuum over phosphorus pentoxide for twenty-four hours: the loss in weight does not exceed 0.25 per cent.

Ash about 0.50 Gm. of choline dihydrogen citrate, accurately weighed: the residue does not exceed 0.05 per cent.

Weigh, accurately, about 0.2 Gm. of choline chloride, U. S. P. Reference Standard, and dilute to 100 cc. with water in a volumetric flask. Weigh, accurately, about 0.45 Gm. of choline dihydrogen citrate and dilute to 100 cc. with water in a volumetric flask. Transfer 0.5, 1.5, 2.5, 4.0 and 5.0 cc. of the standard solution to five conical 15 cc. centrifuge tubes. Transfer 1.5 cc. and 4.0 cc. of the test solution to two additional centrifuge tubes. Add 1.4 cc. of six times normal hydrochloric acid to each tube and dilute to 7 cc. with water. Dissolve 2 Gm. of ammonium reineckate (U. S. P. XIII, p. 741) in 100 cc. of one and two-tenths times normal hydrochloric acid and filter. Add to each centrifuge tube, slowly, with stirring, 5 cc. of the Reinecke solution. Let stand thirty minutes, with occasional stirring, and then centrifuge for fifteen minutes at 2,500 revolutions per minute. Decant the excess liquid, allow the tube to drain and carefully wipe the lip free of any solution. Wash the residue with 3 cc. of cooled one and two-tenths times normal hydrochloric acid by pouring it into the centrifuge tube down the stirring rod previously used. Stir the precipitate gently, but avoid prolonged stirring. Centrifuge for fifteen minutes at 2,500 revolutions per minute, and again discard the supernatant liquid. Dissolve the precipitate of choline reineckate in 2 cc. of acetone and transfer the solution to a 10 cc. volumetric flask. Wash the centrifuge tube twice more with 2 cc. portions of acetone and transfer the washings to the volumetric flask. Dilute the contents of the flask to the mark with acetone and read the light absorption on a spectrophotometer at 5,260 angstroms. Establish a standard curve from the values obtained from the standard solutions. Obtain the concentration of the test solutions by referring their absorption values to the standard curve: the choline content is not less than 98 per cent and not more than 102 per cent.

CHOLINE DIHYDROGEN CITRATE SYRUP: Transfer 5 cc. of the choline dihydrogen citrate syrup to a 250 cc. volumetric flask, using a pipette calibrated to contain. Wash the syrup from the pipette with water, transfer the washings into the flask and dilute to 250 cc. Mix, and transfer 1.5 cc. and 3.0 cc. to two centrifuge tubes. Add 1.4 cc. of 6 normal hydrochloric acid to each tube and continue the assay as previously described: the choline content is not less than 90 per cent or more than 110 per cent of the claimed amount.

FLINT, EATON & CO., DECATUR, ILL.

Syrup Choline Dihydrogen Citrate: 475 cc. bottles. A flavored syrup containing 25 per cent (W/V) of choline dihydrogen citrate. Each 4 cc. contains 1 Gm. of choline dihydrogen citrate.

AMINOPHYLLINE (See New and Nonofficial Remedies, 1947, p. 305).

The following dosage forms have been accepted:

RAYMER PHARMACAL COMPANY, PHILADELPHIA

Solution Aminophylline: Ampuls 0.26 Gm. in 10 cc. and 0.48 Gm. in 20 cc.

Solution Aminophylline with Benzyl Alcohol 2%: Ampuls 0.48 Gm. in 2 cc.

Tablets Aminophylline: 97 mg. and 0.194 Gm.

Tablets Aminophylline: 97 mg. and 0.194 Gm. Each tablet is enteric coated with a mixture of sandarac and phenyl salicylate.

Suppositories Aminophylline: 0.5 Gm.

STREPTOMYCIN (See New and Nonofficial Remedies, 1947, p. 150).

The following dosage form has been accepted:

MERCK & CO., INC., RAHWAY, N. J.

Streptomycin Calcium Chloride Complex: Vials containing streptomycin calcium chloride equivalent in activity to 1 Gm. of streptomycin base.

HUMAN IMMUNE GLOBULIN (See New and Nonofficial Remedies, 1947, p. 425).

The following dosage form has been accepted:

LEDERLE LABORATORIES DIVISION AMERICAN CYANAMID COMPANY

Immune Serum Globulin (Human): 2 cc. vials. Preserved with Merthiolate, 1:10,000.

Council on Foods and Nutrition

ACCEPTED FOODS

The following products have been accepted as conforming to the Rules of the Council.

JAMES R. WILSON, M.D., *Secretary.*

Charles Killgore Company, Inc., Yonkers, N. Y.

DIETICIAN BRAND CHOCOLATE FLAVOR PUDDING, containing Irish moss extract, cocoa, salt, rice flour, artificial flavors, soluble saccharin, dulcin and tricalcium phosphate.

Analysis (submitted by manufacturer).—Moisture 96.00 per cent, ash 0.40 per cent, fat (ether extract) 0.50 per cent, protein (N × 6.25) 0.70 per cent, total carbohydrates 2.40 per cent.

Calories.—0.17 per gram; 4.83 per ounce.

Use.—primarily for low calory and diabetes diets.

Charles Killgore Company, Inc., Yonkers, N. Y.

SAFEMIX, a mixture of soy flour, potato starch, hydrogenated soy oil, potato flour, sugar, salt, sodium bicarbonate, sodium acid pyrophosphate, monocalcium phosphate.

Analysis (submitted by manufacturer).—Moisture 10.50 per cent, ash 4.50 per cent, fat (ether extract) 9.00 per cent, protein (N × 6.25) 23.00 per cent, carbohydrates 53.00 per cent.

Calories.—3.85 per gram; 109.00 per ounce.

Use.—for wheat-free, cereal-free and elimination diets.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, DECEMBER 20, 1947

DIABETES AND ARTERIOSCLEROSIS IN YOUTH

Among the metabolic disorders associated with excessive arteriosclerosis, diabetes mellitus is especially significant. The frequency of advanced arteriosclerotic lesions in youthful diabetic persons is not yet fully appreciated,[1] although many recognize that such lesions occur often in older persons with the disease. The prognostic importance of calcification of the pelvic arteries in pregnant diabetic women has been emphasized by Priscilla White. Between 1938 and 1946 clinical and postmortem records of the New England Deaconess Hospital include 10 patients whose diabetes began before the age of 20 years and 2 others with onset at 22 and 27 years of age with diabetes of two-tenths to twenty years' duration. Of these 12 patients, 7 died at ages between 25 and 32 years; coronary arteriosclerosis with partial or complete occlusion was present. Arteriosclerosis of the renal vessels was present in 6 of the 7, and intercapillary glomerulosclerosis was present in 3. A striking feature of the postmortem examinations of these youthful patients with diabetes of more than ten years' duration is the fact that the lesions of the arteries are not of a single character. They involve all three of the common types: (1) calcification and sclerosis of the tunica media of the Mönckeberg type, (2) intimal atheromatosis involving the aorta as well as the coronary arteries and (3) arteriolar sclerosis evident especially in the renal vessels. The lesions are identical with those seen in persons of advanced age. Of 154 youthful patients studied for arteriosclerosis by roentgen examination of the legs, 106 had demonstrable calcification.[2] In these patients diabetes developed before they reached 15 years of age, and all had survived twenty years of the disease.

Diabetes offers a distinctive opportunity for the study of arteriosclerosis. The onset of diabetes occurs at all ages from childhood upward and the frequency of onset diminishes after the sixth decade, thus proving that it is a complicating rather than an etiologic factor. Arteriosclerosis develops even in young diabetic adults free from other complications provided the diabetes is of sufficient duration and the control of the diabetic state has been imperfect. Deficiency of the hormone insulin is the crucial causative factor. A dietary or nutritional factor contributes to the development of arteriosclerosis in these young patients; this is suggested by the fact that only in patients in whom glycosuria and hyperglycemia had been uncontrolled by careful diet for a period of several years were arteriosclerotic lesions found. Disturbances in fat metabolism characterize many patients with diabetes.

Lipemia and hypercholesteremia occurred commonly before the use of insulin and are not infrequent now in patients inadequately treated with insulin. More significant are the facts presented at the Scientific Exhibit of the American Medical Association at Atlantic City, N. J., in June 1947. Among diabetic persons with onset of the disease in childhood, who had survived twenty years of diabetes, 74 per cent of those now incapacitated by arteriosclerotic lesions of the heart, kidneys or eyes had repeatedly had coma. In contrast, only 17 per cent of those without arteriosclerotic lesions had experienced coma. Streptococcic and staphylococcic infections may be common causes of arteriosclerosis, but rheumatic and scarlet fevers are probably less frequent in diabetic than in nondiabetic persons. Therefore the possibility of watching patients with diabetes mellitus for a long period of time under varying conditions of treatment and intercurrent complications affords unrivaled opportunities for observing the onset and stages of development of arteriosclerosis in different organs. The specific retinal hemorrhages and proliferative retinitis of diabetic youths which often precedes demonstrable vascular lesions elsewhere may be studied. In such cases increased capillary fragility is often an early evidence of arterial disease.

The extent of the arteriosclerotic problem in diabetes has been emphasized by the demonstration in the survey of the population of Oxford, Mass., by members of the U. S. Public Health Service. The discovery that 70 cases of diabetes were present among the 3,500 persons studied tends to confirm other observations. It would appear that the number of persons with diabetes in this country is not only well over 1,000,000 but may reach more nearly 2,000,000; and the number of other persons who are susceptible to the disease may even be three or four times that figure. The number of persons involved and the possibility of making the diagnosis early place a great responsibility on the members of the medical profession because physicians must provide earlier treatment of diabetes mellitus.

1. Arteriosclerosis in Youths, editorial: J. A. M. A. **134**: 608 (June 14) 1947.

2. Joslin, E. P., and others: Treatment of Diabetes Mellitus, ed. 8, Philadelphia, Lea & Febiger, 1946, p. 763.

THE ACCIDENT PRONE

Accidents, as recently emphasized by Press,[1] are fourth in the list of causes of death in the United States. Ninety per cent of accidents are preventable, and four fifths of accidents involving children are due to acts of omission or commission by adults. Endogenous personality factors exist that predispose some persons toward accidents; emotional disturbances such as worry, grief, anxiety and anger cause preoccupation that interferes with alertness and tends to reduce reaction time. Both children and adults use accidents as a means of attracting attention and gaining sympathy.

Accident-prone situations are usually much more readily identified than accident-prone persons. Therefore the bulk of accident prevention has, until recently, been directed toward the elimination of such accident-prone situations in the home, train, automobile and other means of transportation, and in the shop, office or factory.

Although an exact description cannot be drawn of the accident-prone person, several observers have deduced certain characteristics which almost inevitably form part of the personality pattern.[2] Accident proneness in adults is more common in the early age groups (16 to 25 years); reaction time is normal but there is a characteristic inattention probably due to fatigue, neurosis or phobia which draw the attention away from the action at hand. These persons are highly impulsive and tend to react to stimuli with action rather than thought. As children they resent parental authority, run away from home, lie and steal. Early neurotic habits such as enuresis, nail biting and truancy are common. Adults tend to be decisive to the point of impulsiveness and concentrate on daily pleasures without giving thought to long term goals. A history of strict parental authority and resentment of such authority is often elicited. Illness rates for colds and other minor illnesses are well below those of the general population. These persons display a cavalier attitude toward sex, either in marriage or extramaritally, but at the same time have a low incidence of genito-infectious disease.

Resentment of authority is carried over from childhood and directed against authority of relatives, church, employer and officialdom generally. Accident-prone persons tend to be adventurous, like excitement and prefer action at all times. Dunbar [3] states that "when this personality pattern is set beside those of other groups in the population it turns out to match very precisely that of the juvenile delinquent and the adult criminal. The behavior characteristics of the persistent breaker of laws is virtually identical with that of the persistent breaker of bones—right up to the point where the one commits a crime and the other has an accident."

Educational records of these patients frequently show interruption; they leave school or college before the courses undertaken are completed. They may likewise have an unstable employment record marked by sudden changes and periods of being out of work. Their tendency to a venturesome nature often results in their being well liked. They develop strong emotional attachments to other persons. Resentment of authority may be entirely unconscious. They like sports and may become actively athletic. They are always in a hurry even with plenty of time to spare.

The accident-prone persons characteristically have a record of strict upbringing, often develop childhood evidences of neurosis, are impulsive to the point of recklessness and act rather than think in all situations. They tend to avoid authority and responsibility and resent the necessity of earning a living. Accidents are used to bring about dependence and compensation either in the form of sympathy or financial return. Authorities are convinced that it is still difficult to detect accident proneness in any person before he has had an accident. The evidence indicates that accident-prone persons themselves, the automobiles they drive and the machines they operate are "guided missiles" of destruction and as such a hazard to the whole community.

1. Press, E.: Accident Problem, J. A. M. A. **135**: 824-827 (Nov. 29) 1947.

2. Dunbar, F.: Psychosomatic Diagnosis, New York, Paul B. Hoeber, Inc., 1943. Ackerman, N. W., and Chidester, L.: "Accidental" Self-Injury in Children, Arch. Pediat. **53**: 711-721 (Nov.) 1936. Rawson, A. J.: Accident Proneness, Psychosom. Med. **6**: 88-94 (Jan.) 1944.

3. Dunbar, F.: Mind and Body: Psychosomatic Medicine, New York: Random House, 1947.

Current Comment

RESERVATIONS FOR THE ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

The forty-fourth Annual Congress on Medical Education and Licensure will be held under the auspices of the Council on Medical Education and Hospitals and the Federation of State Medical Boards at the Palmer House, Chicago, Feb. 9 and 10, 1948. Papers on the financial support of medical education will provide a highly significant discussion of one of the most important problems facing medical schools at this time. The addition to the undergraduate curriculum of courses on the clinical effects of nuclear fission and on physical medicine and rehabilitation will be discussed by authorities in these fields. The recent intense interest in the subject of general medicine makes the review of programs for preparing students for general practice of particular significance. In addition to the formal program of the congress, several national groups concerned with medical education, research, hospitals and licensure will hold special meetings. These include the Executive Council of the Association of American Medical Colleges, the Advisory Board for Medical Specialties, the National Board of Medical Examiners, the National Society for Medical Research and others. Requests for reservations should be addressed at once to Mr. Fred Runge at the Palmer House and mention should be made of the Annual Congress on Medical Education and Licensure.

PATHOGENIC LACTOBACILLI

Biocca and Seppilli of São Paulo [1] isolated from 2 human cases of sepsis with endocarditis a micro-organism similar to Lactobacillus acidophilus. Both patients suffered from a slowly progressive disease of two to three months' duration and both had previous cardiac involvement. The second patient gave a history of acute articular rheumatism. Both patients also had a recent dental lesion, one a fistula and abscess, the other a multiple extraction for granulomas. The disease began with a "cold"; about two months later there was continuous high fever and finally valvular involvement which brought on death. Thus the cases were similar clinically although widely separated geographically and as to time of occurrence. The ten strains of lactobacilli isolated from these cases were carefully studied and later were inoculated into mice and chicken embryos for further study. The authors formed the opinion that these lactobacilli had a moderate degree of virulence. The clinical severity of the 2 cases, however, is believed to have depended on the localization of the infection on previously damaged heart valves rather than on invasiveness or toxicity of the organisms. Lactobacilli are usually regarded as nonpathogenic except for their association with dental caries; in fact some members of this genus have been considered beneficial, particularly in the intestinal flora. The cases studied by the South American investigators show the need to keep lactobacilli in mind in the bacteriologic diagnosis of endocarditis, particularly since the short type of bacillus can be easily mistaken for the streptococcus.

HEALTH CONDITIONS IN EUROPE

The August 1947 report of the Medical Division of the International Committee for the Red Cross [1] indicates that the food crisis is now more acute than it was last year. Food has become scarce in Eastern and Central Europe, and the health situation is getting worse. The young and the aged are most severely affected; the general death rate is also rising. The situation is aggravated by insanitary and overcrowded dwellings, the lack of heating in winter and lack of clothing. Conditions are particularly deplorable in Austria, Rumania, Hungary and Poland. Belgium and Czechoslovakia are better off than the rest. Much progress has been made in these two countries toward complete economic recovery. The effect of the conditions described on the spread of epidemics and infectious diseases is only too evident. In some of the Albanian villages syphilis has affected as high as 90 per cent of the population. In Rumania 1 person in 12 is reported to be syphilitic. Malaria, always prevalent in Albania and Greece, has now spread to all districts. In Albania the splenic and parasitic indexes observed in schools showed a disease prevalence of 15 to 90 per cent, from which it may be concluded that half the population is at present suffering from malaria. Malaria due to Plasmodium falciparum has risen by 500 per cent during the last few years. In some provinces in Albania this severe form of the disease affected up to 70 per cent of the patients. Typhus, diphtheria, dysentery and typhoid have shown a definite decline. In Rumania pellagra is increasing. Some improvement in the malaria situation in Italy has been accomplished through use of DDT over whole districts. The outlook for 1948 is bad in countries where war was waged most violently. The situation is particularly disastrous in Rumania, Austria and Germany. Harvests have suffered from frost and then from drouth. The committee recommends the following measures: (1) opening of canteens for children of school and preschool age; (2) issuing to infants milk powder, cod liver oil, vitamins, irradiated ergosterol, sugar and farinaceous foods; (3) issuing clothing and footwear to children and adults; (4) opening of fully equipped workrooms where women may mend or make garments under skilled supervision, and (5) equipment of hospitals and clinics with adequate medical supplies, surgical instruments, dressings and, above all, current drugs (heart tonics, insulin, penicillin, sulfonamide compounds, arsphenamine and DDT).

1. Biocca, E., and Seppilli, A.: Human Infections Caused by Lactobacilli, J. Infect. Dis. **81**:112-115, (Sept.-Oct.) 1947.

1. Health Conditions Among the Civilian Population of Certain European Countries Affected by the War, Report No. 3, Medical Division, Comité International de la Croix-Rouge, August 1947.

"TO SECURE THESE RIGHTS"

Recently a report to the President of the United States by the Committee on Civil Rights received much publicity devoted particularly to discriminations in the South against the Negro. In this report some mention is made of the denial of educational opportunities in professional schools to members of minority groups and a long section concerns health services. Without recognizing that there may be racial and constitutional susceptibilities to tuberculosis, the report takes for granted the concept that the condition can be equally well controlled among all peoples. One might question the statement, cited as fact, that discrimination for education withholds from many persons basic information about health. Emphasis is again placed on the failure of hospital facilities for Negroes to maintain pace with similar facilities for the white members of the population. Similarly the report condemns medical schools for failing to admit adequate numbers of Negroes to the study of medicine and takes it for granted that the graduation of Negro physicians would answer the problem of medical care for the Negro in the South. This conclusion may be unwarranted since Negro physicians, like others, tend to go where economic conditions are most suitable to practice. The concluding paragraph of this section merits quotation:

> Progress has been made in reducing Negro deaths due to tuberculosis, diphtheria, whooping cough, diarrhea, enteritis and syphilis. Among the Mexicans in Texas, vigorous programs have been undertaken by federal and local officials. Baby clinics, home nursing classes, family life courses, maternity clinics and other measures have been established. The Indian Service now operates sixty-nine hospitals and sanitoria in the United States; seven in Alaska; fourteen school health centers, and one hundred field dispensaries. Special efforts are being made to combat tuberculosis, a leading cause of illness and death among Indians. Another sign of progress is the decision of the American Nurses Association, in 1946, to accept all qualified applicants as members of the national organization, even when they cannot, for local reasons, enter county societies.

ORGANIZATION SECTION

Official Notes

RESOLUTION ON PRACTICE OF PATHOLOGY BY HOSPITALS

To be Introduced at Interim Session of House of Delegates at Cleveland by Delegate from Indiana

WHEREAS, The House of Delegates has adopted the Vest resolution designed to curb the encroachments of hospitals and institutions on the practice of medicine; and

WHEREAS, Hospitals frequently consider the pathology department as a source of income for the hospital; and

WHEREAS, The practice of pathology has been repeatedly defined by the House of Delegates as the practice of medicine; and

WHEREAS, The American Medical Association's "essentials of a registered hospital" specifically states that the Radiology Department should not be operated for a profit; therefore be it

Resolved, That the American Medical Association's "essentials of a registered hospital" be changed to state that the pathology department should not be operated for a profit; and be it further

Resolved, That this same principle shall be included in the interpretation of the essentials for an approved internship and the essentials for an approved residency.

SCIENTIFIC EXHIBIT

Chicago Session, June 21-25, 1948

Attention is called to the fact that application blanks are now available for space in the Scientific Exhibit at the Chicago Session, June 21-25, 1948.

Each Section of the Scientific Assembly has elected a representative to the Scientific Exhibit to assist and advise in the procurement of exhibits. Their names and addresses follow:

Section on Internal Medicine—Dr. Thomas C. Garrett, 3803 Oak Road, Germantown, Philadelphia.

Section on Surgery, General and Abdominal—Dr. Walter G. Maddock, 250 East Superior Street, Chicago.

Section on Obstetrics and Gynecology—Dr. Frederick H. Falls, 1853 West Polk Street, Chicago 12.

Section on Ophthalmology—Dr. Georgiana D. Theobald, 120 Medical Arts Building, Oak Park, Ill.

Section on Laryngology, Otology and Rhinology—Dr. James B. Costen, 722 Beaumont Medical Building, St. Louis.

Section on Pediatrics—Dr. Albert V. Stoesser, 412 Delaware Street S.E., Minneapolis.

Section on Experimental Medicine and Therapeutics—Dr. Robert W. Wilkins, Evans Memorial Hospital, 65 East Newton Street, Boston.

Section on Pathology and Physiology—Dr. F. W. Konzelmann, Atlantic City Hospital, Atlantic City, N. J.

Section on Nervous and Mental Diseases—Dr. A. B. Baker, University of Minnesota Medical School, Minneapolis.

Section on Dermatology and Syphilology—Dr. Francis W. Lynch, 350 St. Peter Street, St. Paul.

Section on Preventive and Industrial Medicine and Public Health—Dr. Paul A. Davis, 1436 Delia Avenue, Akron 2, Ohio.

Section on Urology—Dr. John H. Morrissey, 40 East 61st Street, New York.

Section on Orthopedic Surgery—Dr. Tom Outland, Crippled Children's Hospital, Elizabethtown, Pa.

Section on Gastro-Enterology and Proctology—Dr. Donovan C. Browne (Gastro-Enterology), 1534 Aline Street, New Orleans.
Dr. J. P. Nesselrod (Proctology), 636 Church Street, Evanston, Ill.

Section on Radiology—Dr. S. W. Donaldson, 326 North Ingalls Street, Ann Arbor, Mich.

Section on Anesthesiology—Dr. Urban H. Eversole, 605 Commonwealth Avenue, Boston.

Section on General Practice of Medicine—Dr. M. B. Casebolt, 4000 Baltimore, Kansas City, Mo.

Applications close on Feb. 2, 1948. Application blanks may be procured from the Section Representatives or from the Director, Scientific Exhibit, 535 North Dearborn Street, Chicago 10.

Council on Medical Service

MIDWEST REGIONAL CONFERENCE

The Midwest Regional Conference of the Council on Medical Service will be held in Cleveland, Jan. 4, 1948. This is the fourth regional conference to be sponsored by the Council in the past year. The state organizations participating will be: Illinois State Medical Society, Indiana State Medical Association, Kentucky State Medical Association, Michigan State Medical Society, Ohio State Medical Association and West Virginia State Medical Association.

The Committee on Arrangements for the conference consists of: Mr. C. S. Nelson, chairman, Columbus, Ohio; Mr. Charles Lively, Charleston, W. Va.; Harold M. Camp, M.D., Monmouth, Ill.; Mr. Ray E. Smith, Indianapolis; P. E. Blackerby, M.D., Louisville, Ky., and Mr. William J. Burns, Lansing, Mich.

Program

E. J. MCCORMICK, M.D., Board of Trustees and Council on Medical Service, American Medical Association, *Chairman*

SUNDAY MORNING SESSION

9:30 A. M. *Registration*

10:00 A. M. *Call to Order*
E. J. MCCORMICK, M.D., Toledo, Ohio
Welcome
R. L. RUTLEDGE, M.D., President, Ohio State Medical Association, Alliance, Ohio
C. W. WYCKOFF, M.D., President, Cleveland Academy of Medicine, Cleveland, Ohio

10:15 A. M. *Exploring for Services—A Round-Table Discussion*
Moderator: JAMES R. MCVAY, Chairman, Council on Medical Service, Kansas City, Mo.

1. Services the American Medical Association Can Render Medical Societies:
W. W. BAUER, M.D., Director, Bureau of Health Education
THOMAS G. HULL, Ph.D., Director, Committee on Scientific Exhibit
MR. J. W. HOLLOWAY JR., Director, Bureau of Legal Medicine and Legislation
MR. A. W. STACK, Director, Membership, Fellowship and Subscription Department
MR. RALPH CREER, Secretary, Committee on Medical Motion Pictures
2. The Council on Medical Service and the State and County Medical Societies:
A. W. ADSON, M.D., Vice Chairman, Council on Medical Service, Rochester, Minn.
3. Improving American Medical Association Services to Medical Societies:
An Open Discussion—Question and Answer Period

12:45 P. M. *Lunch*
Ballroom
Presiding: E. L. HENDERSON, M.D., Chairman, Board of Trustees, American Medical Association, Louisville, Ky.
Luncheon Speaker: R. R. SAYERS, M.D., Chairman, Medical Advisory Board, United Mine Workers of America Welfare and Retirement Fund, Washington, D. C.

SUNDAY AFTERNOON SESSION

2:00 P. M. *What We Can Expect in Compulsory Sickness Insurance Legislation*
JOSEPH S. LAWRENCE, M.D., Director, Washington Office of the Council on Medical Service, Washington, D. C.

2:30 P. M. *Modern Medical Public Relations—A Round-Table Discussion*
Moderator: To Be Announced
Inventory: Mr. LESTER H. PERRY, Executive Secretary, Medical Society of the State of Pennsylvania, Harrisburg, Pa.
Pay Dirt: Mr. HUGH W. BRENNEMAN, Public Relations Counsel, Michigan State Medical Society, Lansing, Mich.
Horizons: Mr. GEORGE H. SAVILLE, Director of Public Relations, Ohio State Medical Association, Columbus, Ohio

3:30 P. M. *Discussion*

5:00 P. M. *Adjournment*

THE ECONOMICS OF THE PRACTICE OF RADIOLOGY

A report prepared by the American College of Radiology for the Council on Medical Service of the American Medical Association

Mac F. CAHAL, J.D.
and
C. E. NYBERG, M.B.A.

In 1939 the American College of Radiology made an extensive survey of radiologic practice in the United States; the report was published by the Bureau of Medical Economics of the American Medical Association in September 1939. The information was obtained from practicing radiologists. Questionnaires were sent to 1,434 members of the four radiologic societies; 876 radiologists completed and returned the questionnaire. The schedule included fifty-one questions. Information was obtained on location according to size of community; years of practice; size of hospitals; age; number of hospitals, and fiscal arrangements with hospitals.

PRESENT SURVEY

In October 1946 a questionnaire with eleven questions was sent with the American College of Radiology's regular *News Letter*. At that time total membership in the college was 1,820. A distribution according to number of replies is shown in table 1.

REPRESENTATIVENESS OF REPLIES

Although neither the name nor the location of the radiologists was requested, it appears reasonable to assume that the 50 per cent return is from a representative sample of the practicing radiologists. The questionnaire was included with the regular monthly *News Letter* that is sent to all fellows and members of the American College of Radiology. The returns were, therefore, from a random selection of radiologists.

The purpose of the survey was explained at the top of the questionnaire. The only bias in representation of radiologists that appears likely is that more replies came from radiologists dissatisfied with their fiscal arrangement than from those satisfied with their arrangement. The resulting ratio of employees of hospitals to independent practitioners may be slightly higher in favor of employees than the actual situation throughout the country. A check on the geographic representation was obtained from the postmark on the envelopes of the returned questionnaires. The ratio of replies according to states and provinces indicated a representative sample according to known distribution of radiologists in the United States and Canada.

TABLE 1.—*Number of Questionnaires Returned*

	Number	Percentage
Total membership A. C. R., 1946	1,820	100
Questionnaires returned	886	49
Radiologists who did not reply	934	51
Questionnaires Used		
Total questionnaires returned	886	
No information or radiologist retired	6	
Replies from radiologists on active duty with Army, Navy, P. H. S. or V. A.	30	
Questionnaires used	850	

QUESTIONNAIRES USED

Approximately 49 per cent of the radiologists took time to fill in the questionnaire and mail it to the headquarters office. Thirty of those who replied were on active duty with the Army, Navy, U. S. Public Health Service and Veterans Administration. These 30 radiologists were not included in the tabulation, because it was considered that they were in a special salary classification. Six other questionnaires were excluded because of lack of information. In a few cases they were from retired radiologists. That left a total of 850 questionnaires from which data were tabulated.

FULL OR PART TIME HOSPITAL PRACTICE

The first question asked for data on practice in a hospital. A major breakdown according to the number of radiologists who are chiefs or directors of a hospital x-ray department and the number with no hospital practice is shown in table 2.

As indicated, 17 per cent of the radiologists devote their entire time to practice in their office, while 83 per cent practice to some extent in a hospital x-ray department. Associates of radiologists with full time office practice are not shown separately in the table, since no separate classification was provided in the questionnaire. Radiologists without hospital connections were instructed to answer only questions nine, ten and eleven, which pertained to office practice, partnerships and malpractice insurance.

TABLE 2.—*Distribution of Radiologists According To Those With Full Time Private Office Practice and Those With Full or Part Time Practice in Hospitals*

	Number	Percentage
Radiologists with full time office practice (no hospital practice)	146	17
Radiologists who are directors of a hospital radiologic department	582	69
Associates of directors of hospital radiologic departments	122	14
Total	850	100

The distribution of radiologists practicing in hospitals according to full and part time is shown in table 3. The majority of radiologists, 65 per cent, devote only part of their time in one particular hospital. They may devote the remainder of their available time to one or more hospital x-ray departments or to private practice in their own office. Additional data on this subject are listed in table 3. For example, 53 per cent of the radiologists practice in one hospital only, 26 per cent in two hospitals, 13 per cent in three and 8 per cent in four or more hospitals. Only 3 or 4 radiologists stated that they practiced in five hospitals, and 1 claimed to practice in six hospitals.

The number of radiologists who have their own office practice as well as a hospital practice is shown at the bottom of table 3. Apparently only a few radiologists who practice part time in hospitals do not have their own office practice also. The total number of radiologists who are employed full time in one hospital is 250. The total number of radiologists who practice in hospitals but have no office practice is 269. That is, 19 of the radiologists who practice part time in one or more hospitals devote their full time to their hospital practice. On a percentage basis that would be approximately 3 per cent.

RADIOLOGISTS EMPLOYED BY HOSPITALS

The second question was: "Are you an employee of the hospital?" To assure statistical accuracy, the question was defined as follows: "For the purpose of this questionnaire, you are an employee if you receive a salary, or a percentage of gross or net receipts, or a salary plus a commission from the hospital as remuneration for services rendered patients in the hospital." Many radiologists that answered "yes" to the question objected to the definition, stating that their fiscal arrangement provided for a division of gross or net income. Such an arrangement in their opinion did not put them in the classification of employee of the hospital. Perhaps a better question would have been: "Does your hospital withhold taxes from sums paid you?" If the answer is "yes" they are clearly an employee; if "no," it may be assumed that the radiologist is an independent practitioner. However, a radiologist occasionally regards himself as an independent practitioner when all the legal characteristics of an agency relation exist.

Additional data were obtained to show the number of radiologists on straight salary and the number with an agreement for division of gross receipts. This breakdown is shown in table 4. In table 5 the distribution according to amount received in percentage of gross or net receipts from services rendered in the x-ray department is shown.

Table 4 presents the breakdown of radiologists who practice in a hospital according to the given definition of employees of

hospitals and independent practitioners in a hospital. A further breakdown of radiologists classified as employees of a hospital according to fiscal arrangement is also included.

Under the definition used in this questionnaire, 86 per cent of the radiologists practicing in hospitals fall in the classification of an employee of the hospital. The remaining 14 per cent are independent practitioners in a hospital. The definition used was: "You are an independent practitioner if you receive no remuneration directly from the hospital, or if you are in the position of a tenant paying a fixed rental or a rental based on a percentage of gross or net receipts to the hospital for use of the space and facilities." It should be noted that the foregoing figures apply only to radiologists practicing in a hospital. When data are included for all radiologists, it is found that 70 per cent are employees of hospitals and 30 per cent are independent practitioners in a hospital x-ray department or in a private office.

A comparison between the current study and the one made seven years earlier shows that the number of radiologists employed on a straight salary has decreased. In 1939, 37 per cent of hospital radiologists were salaried employees; today the proportion has decreased to 32 per cent.

TREND IN FISCAL ARRANGEMENTS FOR RADIOLOGISTS PRACTICING IN HOSPITALS

The study in 1939 showed that 91 per cent of the radiologists practicing in hospitals were employees of hospitals under our present definition of a hospital employee, while 9 per cent were independent practitioners. Thus the number of radiologists who operate hospital x-ray departments on a lease or rental basis has increased from 9 to 14 per cent.

However, the number of radiologists that devote their full time to practice in an office with no time in a hospital x-ray department has decreased since 1939. In 1939 approximately 21 per cent of the radiologists reported office practice only, while in 1946 only 17 per cent stated that they had no hospital practice. This trend is a reflection of the growth of hospitals and the expansion of radiologic science. Special medical services such as radiology and pathology are usually required for hospitalized patients, and the number of hospitals without x-ray equipment has steadily decreased during the last thirty years.

TABLE 3.—*Radiologists in Hospital X-Ray Departments*

Full or Part Time	Number	Percentage
Full time in 1 hospital	250	35
Part time in 1 or more hospitals	454	65
Total	704	100
Number of Hospitals		
Radiologists who practice in 1 hospital	370	53
Radiologists who practice in 2 hospitals	183	26
Radiologists who practice in 3 hospitals	95	13
Radiologists who practice in 4 or more hospitals	56	8
Total	704	100
Number of Radiologists Who Practice in an Office in Addition to Hospital Practice		
Radiologists with office practice as well as hospital practice	420	60
Radiologists with no office practice	269	38
Did not indicate	15	2
Total	704	100

It is encouraging to note the increase in the number of radiologists operating the x-ray department of a hospital as independent practitioners. Such an arrangement meets the requirements of the Principles of Medical Ethics. The interest of hospital administrators and trustees in methods for securing operating income for their hospitals has frequently brought about an attempt to use the x-ray department as a source of income for non-self-supporting departments. The natural procedure on their part is to obtain a radiologist on a salary basis, and usually their choice of radiologists is on a price basis only. This may result in sacrificing quality for low costs and added income to the hospital.

ESTABLISHED PRINCIPLES OF MEDICAL PRACTICE

It is natural for persons to fail to appreciate the importance of professional principles and ethics in any specialized field. However, that fact does not lessen the responsibility of the particular profession to maintain its principles and to educate the public to a proper appreciation of such principles. In the case of medicine, and specifically radiology, continual effort is being made to maintain the principles of medical ethics. Through the American Medical Association and through

TABLE 4.—*Radiologists in Hospital Practice According to Type of Fiscal Arrangement*

	Number	Percentage
1. Radiologists who are employees of a hospital (Includes: Straight salary, salary plus a percentage of gross or net receipts or a straight percentage of gross or net receipts)		
Straight salary	238	32
Salary plus percentage of gross receipts	42	6
Salary plus percentage of net receipts	33	4
Percentage division of gross receipts	266	35
Percentage division of net receipts	68	9
Subtotal	649	86
2. Radiologists who are independent practitioners (Definition: Radiologist pays the hospital a fixed rental, a rental based on receipts or a fee per private case)	107	14
Total	756	100

The total number of different types of arrangements does not agree with total number of radiologists because a radiologist may have a different arrangement with each of two, three or four hospitals.

specialist associations such as the American College of Radiology, physicians are continually striving to maintain and improve their standards. Through their official publications and through conferences and meetings with representatives of other groups and agencies concerned with medical services they are attempting to educate the public to the value of those professional standards.

Even a summary of all the official recommendations on professional standards for the practice of radiology adopted by the American Medical Association and the various specialists' societies would fill a small book. However, it seems well to quote here a short resolution adopted by the House of Delegates of the American Medical Association in 1936:

> We reiterate the principle enunciated by the House of Delegates at Cleveland in 1934, that the practice of radiology, whether for diagnostic or therapeutic purposes, constitutes the practice of medicine. The action of the House of Delegates in 1925 in establishing a Section of Radiology confirms this principle.
>
> We further recommend that all services connected with the practice of radiology be under the direct control and supervision of the medical profession, and this same principle pertains to other technical and professional services.[1]

More specific principles on the practice of radiology in a hospital have been established by the Council on Medical Education and Hospitals of the American Medical Association. The following are excerpts from a report of this council adopted by the House of Delegates in 1939:

> *Radiology.*—1. The responsibility for all radiologic examinations must rest on the physician-roentgenologist who is head of the department. His findings and conclusions for all examinations should be placed in the patient's chart. Nothing in this provision should preclude additional study and interpretations by qualified attending physicians on the staff.
>
> 2. The physician-roentgenologist should be preferably one who is a diplomate of the American Board of Radiology or a physician whose qualifications are acceptable to the Council on Medical Education and Hospitals of the American Medical Association.
>
> 3. It shall not be the policy of the hospital to make a profit from the department of radiology.[2]

Although the Commission on Hospitals Standards of the American College of Radiology recommends as the most satisfactory type of fiscal arrangement between a radiologist and a hospital a contract under which the radiologist leases the x-ray department, it recommends as an alternate or next satisfactory

1. Proceedings of the House of Delegates, American Medical Association, 1936, p. 42.

2. Proceedings of the House of Delegates, American Medical Association, 1939, pp. 48 and 76.

arrangement a contract under which the radiologist and the hospital divide the gross receipts from the department on a percentage basis. It has been demonstrated from numerous records of costs that approximately 50 per cent of the gross receipts are required to cover all expenses of operating an x-ray department, except professional services. Such operating cost includes use of the space, maintenance, heat, light and power, purchase and depreciation of equipment and salaries of technical personnel. It should be pointed out that hospitals which divide net income with their radiologist are clearly violating the third essential in the foregoing quotation.[2]

In table 4 the number of radiologists who practice in a hospital and who, under our definition, are employees of the hospital is shown according to fiscal arrangement. About one half, 44 per cent, have an arrangement for a division of gross or net receipts. In the 1939 survey 47 per cent of the radiologists had fiscal arrangements with hospitals providing for a division of gross or net receipts and 44 per cent were on a salary basis or salary plus a percentage of receipts. The remainder, 9 per cent, were renting the hospital x-ray department. As indicated in table 4, the number of radiologists on salary and percentage of gross or net receipts has decreased slightly in favor of rental arrangements.

TABLE 5.—*Division of Receipts by Amount*

1. Distribution According to Percentage of Gross or Net Receipts (Not All Radiologists Reported a Figure)

Percentage Division of Gross Receipts			Percentage Division of Net Receipts		
	Radiologists Reporting			Radiologists Reporting	
Amount	Number	Percentage	Amount	Number	Percentage
10 to 25%.....	22	8	10 to 25%.....	2	4
30 to 35%.....	54	21	30 to 35%.....	4	7
40 to 45%.....	50	20	40 to 45%.....	7	13
50 to 55%.....	120	47	50 to 55%.....	27	51
60 to 65%.....	10	4	60 to 65%.....	8	15
70 to 75%.....	0	0	70 to 75%.....	5	10
Totals.....	256	100	Totals.....	53	100

2. Distribution According to Salary plus Percentage of Gross or Net Receipts

Salary plus Percentage of Gross Receipts			Salary plus Percentage of Net Receipts		
	Radiologists Reporting			Radiologists Reporting	
Amount	Number	Percentage	Amount	Number	Percentage
10 to 25%.....	9	30	10 to 25%.....	4	15
30 to 35%.....	7	20	30 to 35%.....	4	15
40 to 45%.....	7	20	40 to 45%.....	8	30
50 to 55%.....	9	30	50 to 55%.....	11	40
Totals.....	32	100	Totals.....	27	100

3. Distribution According to Ratio of Net to Gross Income for Independent Practitioners in Hospitals (Not All Reported Total Gross and Net Income)

Amount	Radiologists Reporting	
	Number	Percentage
30 to 40%.....	5	10
45 to 55%.....	28	56
60 to 65%.....	14	28
70 to 80%.....	3	6
Totals.....	50	100

DIVISION OF GROSS OR NET RECEIPTS: AMOUNT RECEIVED BY RADIOLOGISTS

The first part of table 5 contains figures on the percentage of receipts received by the radiologists. On a division of gross receipts, 71 per cent of radiologists receive 40 to 65 per cent of receipts. Under the arrangements for divisions based on net receipts, 79 per cent of the radiologists receive 40 to 65 per cent of the net receipts.

Data on the amount in percentage received by those radiologists who receive a salary plus a percentage of gross or net receipts are also shown in table 5. These figures would be more meaningful if the actual salaries were given. It is significant, however, that over one half of the radiologists in this classification receive from 40 to 55 per cent of the gross or net receipts in addition to a salary.

INDEPENDENT PRACTITIONERS IN HOSPITALS, NET INCOME TO GROSS INCOME

Part three of table 5 contains some valuable data. Radiologists who stated that they were independent practitioners in a hospital were asked to specify their average gross income from the x-ray department and their average net income.

About one half of the independent practitioners in hospitals provided this information for their departments. The actual figures are not given in table 5, but only the ratio of net income to gross income. Under this arrangement 56 per cent of the radiologists reported that net income was 40 to 55 per cent of gross income. This is further evidence that the total cost, excluding professional services, of operating an x-ray department amounts to 45 to 55 per cent of the gross income. Any arrangement between the radiologists and a hospital which allows 45 to 55 per cent of the gross income to the hospital for its costs in furnishing and maintaining a complete x-ray department, not including professional services, should be in practically every case a reasonable and proper arrangement. Such an arrangement is also more flexible than any other and will provide increased income for the hospital and increased income for the professional staff as the x-ray department expands in size, equipment, technical personnel and number of radiologists.

OWNERSHIP OF EQUIPMENT AND COLLECTION OF FEES

Table 6 contains information on a number of factors. As indicated, few radiologists own x-ray equipment in hospitals. Discouragingly few radiologists practicing in hospitals collect the fees for their services or pay the technicians employed in the department.

In 1939, 84 per cent of the radiologists stated that the hospitals owned the equipment. It appears that the increase in x-ray equipment in hospitals is the result of purchases by hospitals and not by the radiologists. In 1939, 19 per cent of the radiologists in hospitals collected the fees for radiologic services, whereas only 16 per cent reported that they collected their fees in 1946.

The Commission on Hospital Standards of the American College of Radiology recommends that radiologists practicing in hospitals render their bill for services on their own statement forms to the patients. However, statements may be made out and collections made by the hospital accounting department. If such an arrangement cannot be worked out, joint billing may be used. If bills are rendered by the hospital, the name of the

TABLE 6.—*Distribution of Radiologists Who Practice in Hospitals; According to Other Factors*

(Totals in Each Instance Vary with the Number Reporting that Item)

		Radiologists Reporting	
		Number	Percentage
1.	Radiologists who pay associates.....	92	13
	Radiologists who do not pay associates or have no associates in the hospital.....	594	87
	Total.....	686	100
2.	Radiologists who own all the x-ray equipment in hospital.....	36	5
	Radiologists who own part of the x-ray equipment in hospital.....	30	4
	Radiologists who own no x-ray equipment in hospital.....	630	91
	Total.....	696	100
3.	Fees collected by radiologists.....	115	16
	Fees collected by hospital.....	595	84
	Total.....	710	100
4.	Technicians paid by radiologists.....	76	10
	Technicians paid by hospital.....	634	90
	Total.....	710	100

radiologist and the services rendered should appear. Even the third choice meets the minimum requirements of professional standards. Medical service is a personalized specialized service rendered directly to a patient. The person receiving such services should be aware of the qualifications of the physician performing the services and of the costs.

TABLE 7.—*Distribution of Radiologists According to Partnerships*

	Number	Percentage	Number	Percentage
Partnership with 1 or more radiologists				
Of those in hospital only	155	22		
Of those in office practice only	33	20		
Subtotal			188	22
No partnership				
Of those in hospital only	549	78		
Of those in office practice only	113	80		
Subtotal			662	78
Totals			850	100

PARTNERSHIPS

Although only a small number of radiologists, 22 per cent, have a partnership with one or more radiologists, there has been a slight increase in partnership agreements. In 1939, 18 per cent of the radiologists reported a partnership arrangement with one or more other radiologists. There are many advantages for the radiologist practicing under a partnership agreement, and the college has, in recent years, encouraged this method of practice.

SUMMARY

Current information concerning the economics of the practice of radiology was obtained from 880 practicing radiologists in October 1946. Replies were received from radiologists in every state except Wyoming. Members of the American College of Radiology in Canada also received the questionnaire, and a number of replies were received. The radiologists were not asked to indicate name or location, but a check of returns by the postmark on the envelope indicated a fair representation according to known distribution of radiologists.

All except three of the questions related to hospital practice only. Of the total number of radiologists, 83 per cent practice full time or part time in a hospital x-ray department, while 17 per cent have an office practice only.

Of the 83 per cent in hospital practice, 250, or 35 per cent, are full time in one hospital, while 454, or 65 per cent, practice part time in one or more hospitals. Practically all the radiologists on a part time basis in one or more hospitals maintain an office practice in addition to their hospital practice.

The tabulation of data according to type of fiscal arrangement with hospitals shows that 86 per cent of the radiologists in hospital practice fall into the classification of employee of the hospital under the definition used in this questionnaire. The remainder, 14 per cent, were independent practitioners in the hospital. In 1939 the ratios for this same classification were 91 per cent hospital employees and 9 per cent independent practitioners in the hospital.

A comparison of the data by type of fiscal arrangement for 1939 and 1946 shows a 5 per cent decrease in the number of radiologists employed by hospitals on a straight salary basis. In 1939, 37 per cent of the radiologists in hospital practice were on a salary, while in 1946 only 32 per cent reported a straight salary arrangement.

Table 5 contains a detailed distribution according to the amount received by the radiologist under agreements for division of gross or net receipts from the hospital x-ray department. Among those who divide gross receipts with their hospital, 71 per cent receive 40 to 65 per cent of the gross receipts. Among those dividing net receipts, 79 per cent receive 40 to 65 per cent of the net profit of the department.

About one half of the independent practitioners in hospitals reported gross and net income for their departments. The ratio of net to gross income was between 40 and 55 per cent in 56 per cent of the cases; for 28 per cent of radiologists the ratio was between 55 and 65 per cent. In only 10 per cent of the cases was net income below 40 per cent of gross income. In 6 per cent the net income amounted to more than 65 per cent of gross income.

The reverse of the foregoing figures give the ratio of costs to gross income. The total operating costs, excluding professional service, was 45 to 55 per cent of gross income in the majority of cases. Similar figures on ratios of costs and net income to gross income have been presented before by individual radiologists. In every instance the average has been 50 per cent. Thus there is considerable evidence that 50 per cent of gross income is required to cover all operating costs of an x-ray department except professional services. This figure should be useful to radiologists and hospital administrators in drawing up agreements for operating the hospital x-ray department. It is also a standard against which cost experience in a given department can be measured.

In regard to the number of radiologists who collect their own fees when practicing in a hospital x-ray department, there has been a decrease from 19 per cent in 1939 to 16 per cent in 1946.

Only 10 per cent of the radiologists practicing in hospitals pay the technicians in the x-ray department. Also, the number of radiologists who own x-ray equipment in a hospital is small. Only 5 per cent of the radiologists own all the x-ray equipment in a hospital; an additional 4 per cent own part of the equipment. In 1939, 16 per cent of the radiologists practicing in hospitals reported that they owned all or part of the x-ray equipment in the hospital.

Washington Letter

(From Our Regular Correspondent)

Dec. 15, 1947.

Anniversary of First Chain Reaction

President Truman issued a message of congratulation to scientists who developed and operated the first nuclear chain reactor on Dec. 2, 1942. He stressed the importance of "efforts to develop and utilize atomic energy for peaceful purposes." Demonstrations conducted at ceremonies marking the anniversary showed how radioactive isotopes, useful for medical purposes, could be created.

Sixty Nations Invited to Congresses on Tropical Medicine and Malaria

The State Department announced that more than sixty nations have been invited to the fourth International Congresses on Tropical Medicine and Malaria to be held in Washington, D. C., next May 10 to 18. This is the first time the events will have been held in the Western Hemisphere and their second time to be staged jointly. The congresses last met in Amsterdam, Netherlands, in 1938. Dr. Thomas Parran, Surgeon General, U. S. Public Health Service, is chairman of the organizing committee. The State Department will sponsor the congresses in collaboration with other agencies and scientific societies.

Coming Medical Meetings

American Medical Association Interim Session, Cleveland, Jan. 5-8. Dr. George F. Lull, 535 N. Dearborn St., Chicago 10, Secretary.

Annual Congress on Industrial Health, Cleveland, Jan. 5-6. Dr. Carl M. Peterson, 535 N. Dearborn St., Chicago 10, Secretary.

Annual Congress on Medical Education and Licensure, Chicago, Palmer House, Feb. 9-10. Dr. Donald G. Anderson, 535 North Dearborn St., Chicago 10, Secretary.

National Conference on Rural Health, Chicago, Palmer House, Feb. 6-7. Dr. F. S. Crockett, 535 N. Dearborn St., Chicago 10, Chairman.

American Academy of Orthopaedic Surgeons, Chicago, Palmer House, Jan. 24-29. Dr. Harold B. Boyd, 869 Madison Ave., Memphis, Tenn., Secretary.

American Society for Surgery of the Hand, Chicago, Jan. 23-24. Dr. Joseph H. Boyes, 1401 S. Hope St., Los Angeles 15, Secretary.

Southeastern Allergy Association, Richmond, Va., Jefferson Hotel, Jan. 17-18. Dr. Katharine B. MacInnis, 1515 Bull St., Columbia 49, S. C., Secretary.

GOVERNMENT SERVICES

ARMY

APPOINT CHIEF OF WOMEN'S SPECIALIST CORPS

In the first move to establish the Women's Medical Specialist Corps authorized by Congress as a part of the medical department of the Regular Army the Surgeon General has announced the appointment of Major Emma E. Vogel as chief of the new corps, with the rank of full colonel.

Colonel Vogel will assume supervision of what has heretofore constituted three separate sections of the medical department. These were the dietitian section, the physical therapist section and the occupational therapist section.

The first task confronting the new chief of corps will be the integration into the Regular Army of qualified applicants for commissions. As integration proceeds, three officers will be selected to head the three branches of the Women's Medical Specialist Corps. These women will be commissioned as lieutenant colonels. Previously no woman has held rank higher than that of major in any of these three specialist groups.

Colonel Vogel, a native of Minnesota, was appointed in 1942 as director of physical therapists of the Army Medical Department; she was the first woman to hold this title.

The authorized strength of the Women's Medical Specialist Corps will be in the ratio of 0.9 member for every thousand persons in the total authorized strength of the Regular Army with a minimum of twenty-four officers in the grade of major and three hundred and eighty-five other officers in grades of second lieutenant to captain.

Duties of Colonel Vogel will include: consultant to the Surgeon General on all matters pertaining to the Women's Medical Specialist Corps; planning and initiation of training programs; formulation of tables of organization and equipment, and planning and execution of operations pertaining to procurement, assignment and promotion of members of the new corps.

X-RAY SURVEY OF CIVILIAN EMPLOYEES

Secretary of the Army Royall announced November 22 the results of the chest roentgenologic survey of civilian employees of the Army in the Washington area. The x-ray program for civilian employees has been in effect in the Army since March 1943; 76,461 persons have been examined and a total of 99,500 original and follow-up roentgenograms made. About 0.5 per cent (380) of the civilian employees examined were found to have active forms of tuberculosis requiring hospitalization. Four hundred and one others had pulmonary lesions but were able to continue to work under restricted activity and close observation. More than 5 per cent (3,953) were found to have other active pulmonary diseases, and of these 178 were acute conditions requiring immediate hospitalization. The remaining 3,675 had chronic conditions of such significance that they were referred elsewhere for active medical care but continued on duty. This project was more than mere case finding. Treatment was arranged for employees and follow-up was routine in active or suspicious cases. Furthermore, instruction was given regarding rest, diet and personal hygiene which enabled hundreds of employees to remain on the job without endangering associates and to be restored to full health without a definite diagnosis of tuberculosis having been made.

AIR FORCE

ESTABLISH AEROMEDICAL MUSEUM

The Air Force School of Aviation Medicine at Randolph Field, Texas, is establishing an aeromedical historical museum. Although aviation medicine is a comparatively new specialty, the methods and equipment employed both in the laboratory and in aircraft have shown much progress. While many articles of early equipment of historical interest may already have been destroyed or lost, it is hoped that those extant can be preserved. Any one who has suitable material which he is willing to loan or donate to this museum is requested to communicate with the Commandant, School of Aviation Medicine, Randolph Field, Texas. Such loaned or donated material will be credited to the donors. Early manuscripts and documents, experimental laboratory devices, aircraft oxygen equipment, parachutes, flying clothing and all other similar items are desired.

COLLECT FOOD AND CLOTHING FOR OVERSEAS

Tons of food and clothing being collected by chaplains at seventy-four Air Force bases throughout the country will be sent overseas for distribution in devastated areas within the next few weeks, Col. Charles I. Carpenter, the Air Chaplain, announced. Military and civilian personnel living on or near Air Force bases are contributing food and clothing at special collection points set up at each base. Contributions are accepted at all base chapels and are consolidated for immediate shipment. Government-issue uniforms and equipment will not be accepted in the relief drive. Relief shipments from the seventy-four Air Force bases will be directed to devastated areas most in need of assistance.

MISCELLANEOUS

THE INDIAN SERVICE NEEDS PHYSICIANS

The U. S. Indian Service has vacancies for qualified physicians in the United States and Alaska, in general practice on the reservations and in hospitals. This service operates sixty-six hospitals and sanatoriums in the states and eight in Alaska and furnishes medical care to approximately 400,000 Indians in the United States and to the native population of Alaska. In the states most of the reservations are located west of the Mississippi River. The Alaska stations are located throughout the territory.

The Indian Service offers the young physician a unique opportunity for a residency or fellowship under the supervision of an experienced medical officer of the service in the general practice of medicine in rural areas. He serves both as the family physician and the local health officer for the Indians of the reservation. In most places he has at his disposal a well staffed and well equipped small hospital, to which he may refer his patients and where he can direct their treatment. He also has the opportunity to become familiar with the administration of a small general hospital.

The entrance salary range is $4,150, $4,902 or $5,905 a year according to the location of the position and the qualifications and experience of the physician. At nearly all stations quarters are available for the physician and his family at a monthly rental of approximately $40. The quarters contain essential furnishings, and the rental includes heat, light and water. An automobile is furnished by the government for official travel, but it is desirable to have a personally owned car for nonofficial travel, i. e., shopping and pleasure trips. All medical and surgical equipment is supplied, as well as standard reference material.

Transfers, arranged at reasonable intervals, offer variety and most assignments are in the vicinity of the nation's most scenic wonderlands.

Detailed information may be obtained from the director of health, Ralph B. Snavely, M.D., Office of Indian Affairs, New Interior Building, Washington 25, D. C.

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Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

ARIZONA

Society News.—At a meeting of the Arizona Society of Psychiatry and Neurology in Phoenix, November 8, Dr. Bernard J. Alpers, professor of neurology, Jefferson Medical College, Philadelphia, gave an address on "The Relation of Neurology and Psychiatry."

Lectures in Phoenix.—The Lois Grunow Memorial Clinic of Phoenix will present a series of lectures February 19-21. The speakers include Drs. Francis D. Murphy, Milwaukee; Lester W. Paul, Madison, Wis.; Frank H. Lahey, Boston; Vincent J. O'Conor, Chicago; Elvira Goettsch, Los Angeles, and William H. Bickel, Rochester, Minn.

COLORADO

Hospital Dedication.—The National Jewish Hospital, Denver, dedicated on December 14 the Hofheimer Memorial Building and the Employees' Residence Hall, the first completed units of the hospital's $2,500,000 modernization and expansion program.

Trust Fund for Cardiovascular Research.—The Henry Strong Denison Memorial Research Contribution Trust was recently created at the University of Colorado Medical Center, Denver. The sum of $22,302 was accepted by the regents of the university for research to be carried on at the medical center under the leadership of Dr. Henry Swan II, associate professor of surgery. The money will be used to establish a cardiovascular research laboratory. The trust fund is being given to the university by the Henry Strong Denison Medical Foundation, Inc., a Delaware corporation, of which Dr. Swan is president and Dr. Florence R. Sabin, Denver, is vice president. The trust will supplement research activities being carried on at the university. The foundation was created by members of the Denison family in memory of Dr. Charles Denison, pioneer Denver physician, and his son, Dr. Henry Strong Denison, a graduate of the University of Colorado School of Medicine. Other gifts made to the university by the family include the Denison Memorial library and auditorium on the medical center campus and the Denison Building on the campus at Boulder.

FLORIDA

Memorial to Dr. Skaggs.—The trustees of James M. Jackson Memorial Hospital, Miami, have decided to name the recently completed five story wing in honor of Dr. Peter T. Skaggs, who died last year, aged 77. Dr. Skaggs helped Dr. James M. Jackson found the city hospital and for twenty years served as its first chief of staff.

Cancer Seminar Well Attended.—Six hundred doctors representing seventeen states attended the cancer seminar in Jacksonville November 13-14 under the auspices of the Tumor Clinic of Duval County Hospital, the American Cancer Society, Florida Division, and the State Board of Health. The lectures have been transcribed, and it is hoped that they can be made available to those interested.

ILLINOIS

Pilot Study in Hearing Conservation Program.—The Illinois Commission for Handicapped Children's advisory committee on hearing conservation in cooperation with nine other institutions and agencies throughout the state is conducting a hearing conservation and rehabilitation program among the 21,000 children of Will County. All children found to have subnormal hearing will be directed to general physicians and otologic specialists for care. Children who require specialized attention in the form of hearing-aid fitting, auditory training and lip reading will be served through the educational agencies of Will County. The program will also provide educational and vocational guidance for several years after the initial procedures have been completed. The project will serve as a model for future programs in other counties of the state.

The work is being conducted with the active cooperation and support of the Will County Medical Society, the county health department and the county superintendent of schools. Institutions and agencies represented in the project include the University of Illinois, Illinois Eye and Ear Infirmary, Northwestern University, the State Department of Public Instruction, Chicago Hearing Society, Illinois Teachers for the Deaf, State Department of Public Health, State Department of Public Welfare, Division of Services for Crippled Children and Illinois State Normal University, Normal.

Chicago

Hospital News.—St. Luke's Hospital will receive $519,692 from the estate of Mrs. Emily L. Gary, former president of the Women's Board of St. Luke's Hospital, who died February 18. Most of the bequest will be used for the addition of a floor to the nurses' school and for a new clinic building.

Dr. Wright Wins Oxford Prize.—Sewall Wright, Sc.D., University of Chicago zoologist, has been awarded the Oxford University Weldon Prize for Research in Mendelian Heredity and Evolution. The prize, awarded every three years for publication of the most outstanding contribution to biometric science, is a bronze medal and $360.

Pediatricians Honor Dr. Abt.—The Chicago Pediatric Society honored Dr. Isaac A. Abt, Chicago, in recognition of his outstanding contribution to pediatrics at its regular monthly meeting in the Rothschild Memorial Hall, Michael Reese Hospital, December 16. The society presented a scroll to Dr. Abt and heard a program by the pediatric staff of Sarah Morris Hospital for Children.

Celebrate Birth of Atomic Age.—The University of Chicago celebrated the fifth anniversary of the birth of the atomic age, Dec. 2, 1942, with two events honoring the scientists who achieved the first self-sustained chain-reacting pile, which made possible the controlled release of nuclear energy. After a luncheon at the Blackstone Hotel, a bronze plaque marking the site of the historic experiment was unveiled on Stagg Field. Speakers at the luncheon included Sumner T. Pike, vice chairman, Atomic Energy Commission; Enrico Fermi, Charles H. Swift, professor of physics, Institute of Nuclear Studies, University of Chicago; Walter H. Zinn, director, Argonne National Laboratory, Atomic Energy Commission; Farrington Daniels, chairman, board of governors, Argonne National Laboratory, and Robert M. Hutchins, chancellor of the University of Chicago.

Institute of Medicine Lectures.—The January and February lectures of the series "Where We Stand in Medicine Today," presented by fellows of the Institute of Medicine, are as follows:

January 9, Vernon C. David, Life Expectancy After Radical Removal of Carcinoma of the Large Bowel Based on Pathologic Considerations.
January 23, Lester R. Dragstedt, Gastric Vagotomy in Treatment of Peptic Ulcer.
February 13, Carl R. Moore, Role of Sex Hormones in Differentiation of the Sexes and in Sexual Abnormality.
February 27, Norbert Enzer, Milwaukee, Pneumonoconiosis, Emphysema and Right Heart Failure.

These lectures on the second and fourth Friday afternoons of each month from 4:45 to 5:30 in the Assembly Room of the institute are open without fee to all physicians and allied professional groups.

INDIANA

New Departments in Medical School.—Administrative reorganization of the Indiana University School of Medicine has been announced. A department of microbiology will be established and the divisions of orthopedic surgery, anesthesia, radiology and gynecology elevated to the status of departments. The department of microbiology is headed by Dr. Randall L. Thompson, formerly of the Medical College of Virginia, Richmond, who is continuing research into growth requirements of viruses and the chemotherapy of virus diseases. Dr. Thompson has served also on the faculties of George Washington University School of Medicine, Washington, D. C., and Western Reserve University School of Medicine, Cleveland. Dr. George J. Garceau, chairman of the division of orthopedic surgery, continues as chairman of the department. Dr. Garceau was recently elected president of the Clinical Orthopedic Society. Dr. Raymond C. Beeler continues as chairman of the department of radiology. Dr. Beeler is the immediate past president of the American Roentgen Ray Society. Dr. V. Kenneth Stoelting has been named chairman of the department of anesthesiology and assistant professor of anesthesia. He has done graduate work in anesthesia at the University of Wisconsin Medical School, Madison, and State University of Iowa College of Medicine, Iowa City, in addition to four years' service in the U. S. Army Medical Corps. William A. Summers, Ph.D., who has been appointed assistant professor in the department of microbiology, was senior parasitologist with the Florida State Board of Health prior to serving four years in the Army with malaria survey and control units. Other appointments include Dr. Sher-

man A. Minton, a graduate of the Indiana University School of Medicine, Bloomington-Indianapolis, 1942, as instructor in the department of microbiology, and Dr. J. Martin Miller, instructor in the department of biochemistry and pharmacology.

IOWA

Appoint Director of Mental Institutions.—Dr. Charles C. Graves Jr., New Jersey State Hospital, Marlboro, became director October 15 of Iowa's six mental institutions. The newly established post was created by the state legislature last spring. Dr. Graves is a graduate of the Medical College of Virginia, 1929.

Dr. Obermann Goes to Oklahoma.—Dr. Charles F. Obermann, superintendent of the Cherokee State Mental Hospital, Cherokee, since 1936, has been appointed mental health director for the state of Oklahoma effective December 1 and is now in charge of the seven mental hospitals. Dr. Obermann is a graduate of the State University of Iowa College of Medicine, Iowa City, 1930.

MASSACHUSETTS

Saturday Morning Health Forums.—The Harvard School of Public Health, Boston, is offering a series of public health forums conducted by distinguished guest speakers. The subject is presented by the speaker during the first hour, and the remaining time is devoted to discussion by members of the faculty and the students. Conferences are held on Saturdays from 11 a.m. to 1 p.m. and because of limited space, admission is restricted to invited guests. The program will extend through May 29. On January 10 Dr. Martha M. Eliot, U. S. Children's Bureau, Washington, D. C., will speak on "The Child in World Health and Social Welfare"; January 17, Dr. Frank G. Boudreau, New York, of the Millbank Memorial Fund, "International Health Problems," and January 24, Major Gen. Raymond W. Bliss, Surgeon General, U. S. Army, "The Army's Part in the Health Program of the Nation."

NEW HAMPSHIRE

Personal.—Robert E. Bannon, formerly on the staff of the Dartmouth Eye Institute, has been appointed to the faculty of Columbia University, where he will teach and do research. He has also accepted a position as research editor for the *American Journal of Optometry* and *Archives of the American Academy of Optometry*. Mr. Bannon, who holds the B.S. degree in optometry from Columbia University, has served as assistant professor in applied physiologic optics at the Dartmouth Eye Institute for twelve years.

NEW MEXICO

Symposium on Congenital Heart Disease.—The New Mexico Clinical Society conducted a symposium on the medical and surgical aspects of congenital heart disease December 12 in Albuquerque. Dr. Thomas J. Dry, Rochester, Minn., and Dr. Thomas H. Burford, consultant in chest surgery at Barnes Hospital, St. Louis, were the speakers.

NEW YORK

Postgraduate Lectures.—The Medical Society of the State of New York, with the cooperation of the New York State Department of Health, has arranged the following lectures for county medical societies: Otsego County Medical Society at Tunnicliff Inn, Cooperstown, 8:30 p.m., December 17, Dr. Richard H. Lyons, Syracuse, "Recent Advances in Therapy"; Schenectady County Medical Society, two lectures at the Medical Library of Ellis Hospital, Schenectady, 8:30 p.m., one January 6, Dr. Frank Glenn, New York, "Surgical Treatment of Biliary Tract Disease," the other February 3, Dr. Richard H. Lyons, Syracuse, "Management of Hyperthyroidism"; Onondaga County Medical Society at the University Club of Syracuse, 8:30 p.m., January 6, Dr. John H. Garlock, New York, "Recent Advances in Gastrointestinal Surgery."

New York City

Society News.—Dr. Charles S. Cameron Jr., acting medical and scientific director, American Cancer Society, Inc., will read a paper on "Possible Etiologic Factors in Intraoral Cancer" at the monthly conference of the New York Institute of Clinical Oral Pathology Monday evening, December 22, at the New York Academy of Medicine.

Virus Diagnostic Laboratory.—The Public Health Research Institute of the City of New York, Inc., is organizing a service for the diagnosis of virus and rickettsial diseases for the health department. The laboratory will be headed by Dr. George K. Hirst, chief of the division of infectious diseases of the institute. Personnel is to be supplied by the health department. When the laboratory is ready to begin operation, general practitioners will be able to go to the health department for the advice of specialists on virus disease.

Rosenstock Foundation Fellowships.—The Rosenstock Memorial Foundation, Inc., a philanthropic foundation, has granted its 1948 fellowships to Drs. Raymond S. Megibow, Mt. Sinai Hospital; Doris J. W. Escher, Montefiore Hospital, and Roslyn Weiner, New York Hospital. The foundation will offer three similar fellowships of $2,000 per annum for 1949, renewable on reapplication and favorable reconsideration for one additional year. The grants are limited to the support of individual medical research to be conducted in hospitals with medical school affiliations in any of the five boroughs of New York City. Fellowships, which may be granted either for full time or part time medical research, will be limited to those who apply within three years of completion of internship or residency (excluding time spent in military service), except that a recipient of the fellowship may reapply for one renewal of the grant. Applications must be endorsed by the director of the hospital where it is proposed that the research shall be conducted and forwarded by the endorser to the foundation at 42-16 West Street, Long Island City 1, New York, by Oct. 1, 1948.

OKLAHOMA

University Appointments.—The University of Oklahoma, Oklahoma City, has named Mark R. Everett, Ph.D., chairman of the department of biochemistry, as temporary dean of the School of Medicine. Dr. Everett has been a member of the faculty since 1924. He succeeds Dr. Jacques P. Gray, who resigned to become medical advisor of Parke, Davis & Company. Dr. Arthur A. Hellbaum, professor of pharmacology, has been named associate dean of graduate studies and research; Dr. Henry H. Turner, associate professor of medicine, associate dean of faculty, and Homer F. Marsh, Ph.D., professor of bacteriology, associate dean of students. These men will continue their departmental duties in addition to their new assignments.

PENNSYLVANIA

Society Desires Names of Centenarians.—All Pennsylvanians who are now or will be 100 years old during 1948 are being invited to join the Medical Society of the State of Pennsylvania in its centennial celebration next year. According to the census bureau, there are more than a hundred persons in the state who are 100 years of age or older, and the medical society is anxious to know who they are. Relatives or friends of all Pennsylvania centenarians are requested to send such names to the Medical Society of the State of Pennsylvania, 230 State Street, Harrisburg.

Pittsburgh

Society News.—The Pittsburgh Obstetrical and Gynecological Society has elected as officers for the coming year Drs. Joseph A. Hepp, president; Eugene A. Conti, vice president, and Clarence H. Ingram Jr., secretary.

TEXAS

University News.—Dr. Charles E. Hall, formerly associated in endocrine research with Dr. Hans Selye in Montreal, Canada, has been appointed assistant professor of physiology at the University of Texas Medical Branch, Galveston. Dr. Hall will cooperate with Dr. Raymond L. Gregory, professor of medicine, in the development of an endocrine clinic in the John Sealy Hospital. Recent special lecturers at the university include Dr. Granville A. Bennett, professor of pathology, University of Illinois Medical Center, Chicago, who spoke on "Pathology of Fibrous Dysplasia of Bone," and Dr. Clifford D. Sweet, Oakland, Calif., who gave a series of lectures during the first week in December on bone growth and development in children and methods of child management. John G. Sinclair, Ph.D., University of Texas Medical Branch, Galveston, was elected president of the Texas Academy of Science at the annual meeting in Austin in December.

WISCONSIN

State Medical Election.—At the annual meeting of the State Medical Society of Wisconsin in Milwaukee October 6-8, Dr. William D. Stovall, Madison, became president and Dr. Karl H. Doege, Marshfield, was chosen president-elect.

Fifty Year Club Authorized.—The council of the State Medical Society of Wisconsin has authorized a Fifty Year Club for approximately one hundred and fifty physicians in the state. They were honored at the annual dinner and were given plaques in recognition of their fifty years of practice.

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PUERTO RICO

Public Health News.—Dr. Fred T. Foard has been appointed medical director of the U. S. Public Health Service in San Juan to succeed Dr. Alfred J. Aselmeyer, who has been transferred to Atlanta, Ga. According to preliminary figures on a survey of hospital facilities in Puerto Rico, the following allocations of funds will be made during the 1947-1948 fiscal year for the hospital construction program: general public health, $265,788; venereal disease control, $232,381; tuberculosis control, $168,497; mental diseases, $66,147; cancer control, $50,676, and hospital construction, $2,489,100. The last amount is divided in two parts, one for the construction program and $27,225 for planning and surveys. The U. S. Public Health Service office in San Juan is in charge of supervising of the hospital construction and survey program. Construction will be undertaken by the insular Department of Health and the insular Interior Department.

GENERAL

Awards in Endocrinology.—Three awards of $500 each have been made to the following scientists for their recent outstanding research in the fields of endocrinology: Dr. Fuller Albright, Boston, clinical endocrinology, Robert D. H. Heard, Ph.D., Montreal, Canada, hormone chemistry, and Dwight J. Ingle, Ph.D., Kalamazoo, Mich., animal experimentation. The winners of the awards, sponsored by Roche-Organon, Inc., were selected by the committee on awards of the Laurentian Hormone Conference.

Education Association Opposes Antivivisectionists.—At a recent meeting of the representative assembly of the American Association for Health, Physical Education and Recreation, a department of the National Education Association, the following resolution was adopted:

Antivivisectionists.—In view of the great progress that has been made in preventive and curative medicine and surgery through animal research and the prospect of even greater progress in the future, we are unalterably opposed to the prohibition of this scientific procedure. Such a prohibition would seriously hamper all medical progress.

Special Society Elections.—At the first annual meeting of the Western Society for Clinical Research, San Francisco, November 7-8, Dr. Mayo Soley, San Francisco, was elected president and Dr. Helen Martin, Los Angeles, secretary-treasurer.——At the annual meeting of the American Society of Anesthesiologists in New York December 4-6, Dr. Charles F. McCuskey, Los Angeles, became president and the following were elected to other offices: Dr. H. Boyd Stewart, Tulsa, Okla., president-elect; Dr. Curtiss B. Hickcox, Philadelphia, secretary, and Dr. Moses H. Krakow, New York, treasurer.

Essay Contest.—The eighth annual essay contest of the Mississippi Valley Medical Society will be held in 1948. The society will offer a prize of $100, a gold medal and a certificate of award for the best unpublished essay on any subject (including medical economics and education) of general medical interest and practical value to the general practitioner of medicine. Contestants must be members of the American Medical Association who are residents of the United States. Contributions (five copies to be submitted) must be typewritten in English in manuscript form, must not exceed 5,000 words and must be received not later than May 1, 1948.

Student Nurse Recruitment.—The Student Nurse Recruitment Committee reports an enrolment of about 40,000 new student nurses in the nation's 1,227 schools of nursing during the current year. After a study of the projected enrolment figures tabulated from surveys conducted by the committee, the estimate indicates an increase of 1,900 over the previous peacetime high in 1940 and 9,000 over the 1946 total. The goal for the 1948 campaign will be 50,000 new nursing students. The Woman's Auxiliary of the American Medical Association has again pledged active assistance for the 1948 nurse recruitment campaign. The Rotary International, the American Dental Association, the National Tuberculosis Association, the General Federation of Women's Clubs and the American Legion are being invited to continue their support of nurse recruitment activities during the coming year.

Meeting of Interns and Student Association.—The Association of Interns and Medical Students will hold its annual convention at the Chicago Professional Colleges of the University of Illinois in the Chicago Illini Union, 715 South Wood Street, Chicago, December 27-29. The clinics on Saturday morning will be in charge of Dr. Warren S. Cole, professor of surgery, University of Illinois College of Medicine; Dr. Walter L. Palmer, professor of medicine, University of Chicago College of Medicine, and Dr. Samuel Soskin, medical director, Michael Reese Hospital. At a symposium on medical education and practice to be held at 2 p.m. Sunday Dr. Arthur C. Bachmeyer, dean, division of biologic sciences, University of Chicago, John J. Sheimen, dean, Chicago Medical School, and Dr. W. Montague Cobb, Howard University College of Medicine, Washington, D. C., will speak. In the evening there will be a symposium at which Dr. Harlow Shapley, Sc.D., Harvard University, Cambridge, Mass., and president, American Association for the Advancement of Science, will discuss "The American Scientist—Citizen in the World Today," and Dr. Frank A. Calderone, New York, will discuss the World Health Organization. Concluding speaker of the symposium will be Theodore Rosebury, D.D.S., Columbia University College of Physicians and Surgeons, New York, who will present a discussion of bacterial warfare. Among the other features will be exhibits, films, and a bus tour including points of medical, civic and cultural interest in Chicago.

Medical Services Foundation Dissolved.—The board of trustees of Medical Services Foundation met in Chicago December 1. The members unanimously decided (*a*) to dissolve Medical Services Foundation and (*b*) to refund to all contributors the full amounts of money paid into the treasury of Medical Services Foundation.

The members of the board of trustees are convinced that 1948 will prove to be the "year of decision." They are convinced that effectiveness in operation can be quadrupled by unifying the efforts through merging contributions from the industries and the professions.

The Management Committee of the National Physicians' Committee voted unanimously that the National Physician' Committee should receive in its treasury all contributions tendered by members of the drug manufacturing industry. Refund checks have been issued to all contributors to the Medical Services Foundation. More than 90 per cent of the refunds made have been pledged to the National Physicians' Committee as contributions for 1947.

First International Poliomyelitis Conference.—The National Foundation for Infantile Paralysis will sponsor the first International Poliomyelitis Conference at the Waldorf-Astoria Hotel, New York, July 12-17, 1948. The Department of State has been requested to transmit invitations to more than sixty foreign governments to send official delegates to the conference. These officials will be asked to present summarizations of the problems of poliomyelitis in their countries at a special session at which Dr. Thomas Parran, Surgeon General, U. S. Public Health Service, will preside. Official host to the delegates will be Basil O'Connor, president of the national foundation. Dr. Hart E. Van Riper, the foundation's medical director, has been appointed general chairman of the conference.

The program will include papers on research and treatment of poliomyelitis to be presented by authorities from this country and abroad. There also will be panel discussions. The conference has established headquarters in the Waldorf-Astoria Hotel under the direction of Stanley E. Henwood, Chicago, executive secretary of the conference. The program is being arranged by an advisory board which includes: Drs. Irvin Abell, Louisville, Ky.; Morris Fishbein, Chicago, Editor of THE JOURNAL; David P. Lloyd, Ph.D., associate member, Rockefeller Institute for Medical Research; Drs. Kenneth F. Maxcy, professor of Johns Hopkins University School of Medicine, Baltimore; Rustin McIntosh, Columbia University College of Physicians and Surgeons, New York; Frank R. Ober, Harvard Medical School, Boston, and Thomas M. Rivers, the Rockefeller Institute for Medical Research.

There will be a scientific exhibit, demonstrations of muscle testing and treatment procedures and a film program. Coordinating this phase of the conference will be an advisory committee of Thomas G. Hull, Ph.D., director, scientific exhibit of the American Medical Association and Dr. Charles F. Branch, director, scientific exhibits of the American College of Surgeons.

Marriages

DAVID SMITH HUBBELL, Durham, N. C., to Miss Barbara Margaret Baynard of St. Petersburg, Fla., July 3.

CARLOS L. HUDSON, Urbana, Ill., to Miss Betty Jean Pace of Blacksburg, Va., in Elliott City, Md., October 11.

WILLIAM BATTE STANTON, Emory University, Ga., to Miss Harriet Elizabeth Branch of Atlanta, October 4.

CHARLES HOLLAND RAWLS, Suffolk, Va., to Miss Betty Jo Batten of Welch, W. Va., September 20.

PAUL MCBEE ABERNETHY, Forest City, N. C., to Miss Mary Nell Tucker in Rutherfordton, June 7.

Deaths

Holman Taylor ✠ Fort Worth, Texas, prominent in organized medicine, died at his home December 4, aged 73, of coronary occlusion. Dr. Taylor was stricken at the conclusion of a dinner in his honor given by the Tarrant County Medical Society which was attended by many of the distinguished physicians of Texas. He died as he was leaving the platform.

HOLMAN TAYLOR
1874-1947

Dr. Taylor was born in Hallsville, Texas, April 8, 1874. He received his B.S. degree at Bethel College, Ky., in 1896, graduating at the University of Texas School of Medicine, Galveston, in 1899. While in college he was associate editor of his college monthly and annual publications and business manager for the Medical Department of the University of Texas "Cactus" in 1899, early qualifications which equipped him for his appointment in 1910 to the editorship of the *Texas State Journal of Medicine*, a position he held until his death. After graduation, Dr. Taylor became associated with his father, both serving as chief surgeons for the Marshall and East Texas Railroad and health officers of Harrison County. During the first four months of Governor Campbell's administration, Dr. Taylor was assistant state health officer, resigning to return to his practice.

Second only to the medical profession was Dr. Taylor's interest in military affairs. He enlisted in the state militia in 1891 and served in every rank from private to brigadier general before his retirement. He was a hospital steward in the Spanish-American War, but previously, and again until 1936, was in the infantry. From 1936 until 1938 he was in the artillery. He was never a medical officer. He served in the line in France during World War I. When retired from the Army in 1938 he was discharged with the rank of brevet major general. In 1910 he was commander of the "Joe Wheeler" camp number 6 of the United Spanish War Veterans, Marshall. During World War II he was chairman of procurement and assignment of physicians for Texas.

Dr. Taylor had long been an ardent advocate for organized medicine in all its ramifications. In 1901 he was secretary of the Harrison County Medical Society. He was president of the Tri-State (Arkansas, Louisiana and Texas) Medical Association, 1906-1907, and president of the Northwest Texas District Medical Society in 1910. He was elected councilor of the Texas State Medical Association in 1903 and secretary in 1904, a position he held until his death. He was a member of the House of Delegates of the American Medical Association from 1912 to 1914 and from 1920 to his death. In 1917 he was fourth vice president of the American Medical Association, and a member of the Judicial Council from 1939 to 1942. He was a member of numerous local and national organizations including the Texas Tuberculosis Association, of which he was a director, and the Texas State Historical Association.

In his capacity as sergeant-at-arms during the House sessions, a position he held for many years, Dr. Taylor's natural humor frequently presented a mock deference that was stimulating. Coupled with his rare humor, Dr. Taylor had a firmness and determination that gave him stature in everything he undertook.

In the death of Holman Taylor the medical profession has lost a counselor and valued friend. Earnest and devoted to the very end, his efforts warranted the appreciation and deference of all who were associated with him in both local and national medical affairs. He was a great fighter for the ideals of our democracy and of the medical profession.

George Elmer Shambaugh, for many years professor and head of the department of otolaryngology at Rush Medical College, Chicago, died at Wesley Memorial Hospital, November 30, aged 78, of cancer of the lung.

Dr. Shambaugh was born in Iowa, Nov. 15, 1869, and graduated from the University of Pennsylvania Department of Medicine, Philadelphia, in 1895. He then did postgraduate work for two years at the University of Berlin and the University of Vienna, and on his return became instructor in anatomy at the University of Chicago in 1900, where he carried on research.

Dr. Shambaugh was professor and head of the department of otolaryngology at Rush Medical College from 1916 until 1935, when he became clinical professor emeritus, and was otologist and laryngologist to the Presbyterian Hospital, Chicago, from 1902 until 1935. His eminence in this specialty was attested by his election to be president of the American Otological Society, the American Laryngological Association, the

GEORGE ELMER SHAMBAUGH
1869-1947

Chicago Laryngological and Otological Society and the Institute of Medicine of Chicago. He was a member of numerous other scientific societies including the American Laryngological, Rhinological and Otological Society, the Chicago Medical Society and the American College of Surgeons. Dr. Shambaugh was a founder and later an honorary member of the American Board of Otolaryngology. He was secretary of the Section on Laryngology and Otology of the American Medical Association from 1908 to 1911, chairman of the section in 1911-1912 and a member of the House of Delegates in 1916. Dr. Shambaugh was

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chief editor of the *Archives of Otolaryngology*, from the time it was established in 1925 until 1937, at which time the board of trustees of the American Medical Association tendered to him its utmost appreciation for his contribution to the advancement of the *Archives*. In 1912 he became the first American to be awarded by an international committee the Baron de Lenval Prize for research on the internal ear. He not only contributed frequently to the current medical literature but wrote chapters for several textbooks on the ear and nasal sinuses. Dr. Shambaugh was eminent as a scientist and outstanding as a leader in the advancement of his specialty. As an educator, a practitioner and a contributor to research he achieved worldwide recognition.

Charles Allen Armstrong, Prairie Du Chien, Wis.; Rush Medical College, Chicago, 1887; member of the American Medical Association; at one time mayor of Boscobel; served as medical examiner during the Spanish-American War, World War I and World War II; formerly secretary of the Crawford County Medical Society; died in Methodist Hospital, Madison, September 16, aged 85, of uremia and prostatic hypertrophy.

Edward William Blakely, Orange, N. J.; University of Vermont College of Medicine, Burlington, 1912; affiliated with St. Mary's and Orange Memorial hospitals; died September 29, aged 59, of acute nephritis.

Vincent Brendan Bowler, Oak Park, Ill.; Rush Medical College, Chicago, 1919; member of the American Medical Association; served during World Wars I and II; formerly clinical associate in the department of dermatology at Loyola University School of Medicine in Chicago; died October 25, aged 52, of injuries suffered in an automobile accident.

Howard Austin Collins, Williamsport, Pa.; Jefferson Medical College of Philadelphia, 1896; served during World War I; died in the Williamsport Hospital September 26, aged 75, of carcinoma of the bladder with metastases.

Robert M. Cowan, Springfield, Mo.; Washington University School of Medicine, St. Louis, 1897; veteran of the Spanish-American War; at one time secretary of the Greene County Medical Society; died September 13, aged 75, of coronary thrombosis.

Andrew Jackson Driskill, Marion, Ky.; Vanderbilt University School of Medicine, Nashville, Tenn., 1889; died recently in Phoenix, Ariz., aged 80, of pneumonia.

Edward Montgomery Duncan, Baltimore; University of Maryland School of Medicine, Baltimore, 1884; died September 29, aged 86, of arteriosclerotic heart disease and bronchopneumonia.

George H. Evans ✠ Berkeley, Calif.; Detroit College of Medicine, 1891; fellow of the American College of Physicians; co-founder of the San Francisco Tuberculosis Association; served as president of the California Association for the Study and Prevention of Tuberculosis; at one time on the staffs of the City and County and St. Luke's hospitals in San Francisco; died September 5, aged 77, of cerebral hemorrhage and arteriosclerosis.

Shuler Francis Fagan, Los Angeles; College of Medical Evangelists, Los Angeles, 1924; member of the American Medical Association; fellow of the American College of Surgeons; served during World War II; affiliated with the Los Angeles County Hospital, Hospital of the Good Samaritan and St. Vincent's Hospital; consulting surgeon for the Southern Pacific Railroad; died September 4, aged 51, of coronary thrombosis.

Ernest Charles Foster, Hanford, Calif.; Medical Department of the University of California, San Francisco, 1902; for many years county health officer; died September 23, aged 70, of arteriosclerotic heart disease.

Ottis Lee Graham ✠ Colonel, U. S. Army, retired, Columbus, Ga.; Northwestern University Medical School, Chicago, 1914; Army Medical School, 1917, 1923 and advanced in 1930; Medical Field Service School in 1922; served during World War I; entered the medical corps of the U. S. Army in 1917; retired February 29, 1944, for disability in line of duty; died in St. Joseph's Hospital, London, Ontario, Canada, September 25, aged 60, of coronary thrombosis.

John Pennington Henry ✠ Pittsburgh; University of Pennsylvania School of Medicine, Philadelphia, 1927; fellow of the American College of Surgeons; president of the board of trustees of the Mayview (Pa.) State Hospital; affiliated with Mercy Hospital, where he died September 30, aged 49, of complications following an operation for perforated ulcer.

Otho Douglas Hooker, Lexington, Miss.; Medical Department of Tulane University of Louisiana, New Orleans, 1912; died in Baptist Memorial Hospital, Memphis, Tenn., September 28, aged 58, of coronary infarction.

Le Roy Spangler Howard, Harrisburg, Pa.; Jefferson Medical College of Philadelphia, 1910; for many years medical examiner for the Pennsylvania Railroad; died recently, aged 61, of coronary occlusion.

William Henry Kahrs ✠ New York; Bellevue Hospital Medical College, New York, 1894; an Affiliate Fellow of the American Medical Association; also a graduate in pharmacy; medical examiner for a local draft board during World War I; served on an induction board during World War II; a founder and affiliated with the Union Hospital, where he died September 25, aged 75, of cardiovascular disease.

John Leonard Klein Sr., Muscatine, Iowa; State University of Iowa College of Medicine, Iowa City, 1897; served as secretary of the Muscatine County Medical Society; member of the Chamber of Commerce; president of the board of directors of the Bellevue Hospital, where he died September 30, aged 73, of multiple myeloma.

Charles John Landfried, New Orleans; Medical Department of Tulane University of Louisiana, New Orleans, 1891; professor of otolaryngology emeritus at his alma mater; fellow of the American College of Surgeons; affiliated with the Touro infirmary; died September 23, aged 77, of cardiovascular disease.

Augustus Carl Maisch ✠ Hagerstown, Md.; University of Pennsylvania Department of Medicine, Philadelphia, 1894; fellow of the American College of Surgeons; member of the medical advisory board during World War I; affiliated with the Washington County Hospital, where he died September 28, aged 75, of heart disease.

Linnaeus Esher Marter, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1896; Medico-Chirurgical College of Philadelphia, 1902; member of the American Medical Association; served as clinical professor of laryngology and rhinology at the Hahnemann Medical College and Hospital; affiliated with the Hahnemann Hospital, where he died September 17, aged 72, of cerebral thrombosis and essential hypertension.

Eugene Moreau Murphey, Macon, Miss.; University of Louisville (Ky.) Medical Department, 1891; died September 15, aged 78, of arteriosclerosis and cerebral hemorrhage.

Christian Augustus Nelson, Cambridge, Mass.; Harvard Medical School, Boston, 1911; died September 20, aged 73, of carcinoma of the colon.

Wesley Jerome Netolicky ✠ Cedar Rapids, Iowa; Drake University Medical Department, Des Moines, 1896; for many years president of the Swisher Trust and Savings Bank; died in Mercy Hospital September 26, aged 76, of coronary sclerosis.

Edward Joseph Perrault, Houston, Texas; Medical Department of Tulane University of Louisiana, New Orleans, 1897; died September 24, aged 73, of cerebral hemorrhage.

Ernest Albert Rogers, Fort Collins, Colo.; State University of Iowa College of Homeopathic Medicine, Iowa City, 1904; on the faculty of the University of Iowa College of Dentistry in Iowa City for fifty years; died recently, aged 80, of coronary thrombosis.

Thomas Clyde Routson, Frederick, Md.; University of Maryland School of Medicine, Baltimore, 1899; member of the American Medical Association; died recently, aged 74, of pneumonia following an operation for carcinoma of the bowel.

Robert P. Stinchcomb, Atlanta, Ga. (licensed in Georgia in 1896); member of the American Medical Association; died September 23, aged 75, of respiratory failure.

Milton Tharp, Topeka, Kan.; Vanderbilt University School of Medicine, Nashville, Tenn., 1913; member of the American Medical Association and the Tennessee State Medical Association; at one time assistant professor of anatomy at his alma mater; died in the Security Benefit Hospital September 26, aged 58, of coronary thrombosis.

Elizabeth Colden Underhill, Poughkeepsie, N. Y.; Cornell University Medical College, New York, 1900; member of the Massachusetts Medical Society and the American Medical Association; for many years resident physician at the Mount Holyoke College in South Hadley, Mass.; died September 20, aged 76, of myocarditis.

Rolland Cecil Woodruff ✠ Grand Island, Neb.; Rush Medical College, Chicago, 1913; past president of the Hall County Medical Society; member and formerly secretary of the Radiological Society of North America; for many years member and in 1937 president of the board of education; on the staff of St. Francis Hospital; died September 9, aged 59, of cerebral thrombosis and arteriosclerosis.

Foreign Letters

PARIS

(From Our Regular Correspondent)

Nov. 7, 1947.

Regulating Specialists

Formerly every graduate in medicine, after being entered on the roll of the "Order of Doctors," was in principle justified without any further authority in undertaking a specialty. In fact, a large number of them were former "externs" or "interns," having thus practiced several years in their chosen speciality. Nevertheless, the situation gave rise to complications after the Social Security Law became effective necessitating special examinations. For a year the National Council of the Order of Doctors, together with the Syndicate of Doctors, has endeavored to find a practical solution to this problem. In the case of psychiatry the subject was debated last year by the Psychiatry Commission of the Union of French Doctors. In this branch the problem has been settled, in principle, by the Faculty of Medicine issuing a diploma in neurology after a three year term for "interns" (resident medical students) appointed after a competitive examination in faculty towns and a four year course for other students; for psychiatrists, this would mean two years of practice of psychiatry and one year of practice of neurology in hospital services specified by faculties; at the end of this period there would be a probational examination. A similar decision has been taken and submitted to the Minister for National Education for other specialities. But pending a definitive organization of this teaching in the faculties, a transitory arrangement has been evolved by the organizations of doctors and the Ministry for Public Health and Population, as regards specialists who are already practicing and those who wish to take up a particular branch. According to this ministerial order, every specialist is to address to the council of the order an application showing his qualification for the specialty. This will be forwarded to the regional commission, established in every Social Security Region, which draws up the list of approved specialists. This commission, appointed by the Minister for Public Health and Population, is composed of one specialist, a member of the teaching staff of the Faculty of Medicine, two other members specialists proposed by the National Council of the Order of Doctors and two specialists proposed by the Syndicate of Doctors. The director of the district health service and the advisory doctor to the social security are members of the commission in an advisory capacity. The doctor whose application is dismissed may appeal before a national commission related to the Minister for Public Health and Population. The refusal of this commission is effective for one year, after which a repetition of the application can be made giving proof of the specialization acquired during this period.

Antibiotics of Microbial Origin

Dr. Broch, director of the Antibiotics Center, discusses "tyrothricine," the industrial production of which it has been possible to realize. An extensive inquiry in the Paris hospitals has shown good results by irrigation in ulcers and in purulent pleurisy. Dr. J. Reilly, at the Claude Bernard Hospital and Huber at the Enfants Malades Hospital, have reported good results against diphtheria; in many cases it has been possible to sterilize carriers of diphtheria within three to six days. In France, research on Bacillus subtilis is effected by two groups of workers. At the Pasteur Institute, Ramon and Richou deal with subtilis filtrates; Oliver de Saint-Rat, Bonnet Maury and Blanchon have extracted from B. subtilis a substance called endosubtilysin, which is effective against Staphylococcus aureus and hemolytic streptococci, colon bacilli, Eberthella typhosa and Koch's bacillus; experiments on animals inoculated with tubercle bacilli are encouraging. Vallee has isolated subtilysine, an active principle. This product has an effect in vitro on the gram-positive and gram-negative germs, on aerobic organism and on toxins.

Professor Agrégé J. Hamburger, in a speech on sulfonamide drugs, emphasized 4,4'diaminodiphenylsulfone discovered by Rist at the Pasteur Institute, which prevents the in vitro multiplication of human and bovine tubercle bacilli. Sulfones are too toxic for general treatment. From July 1945 to the present (unpublished researches) Rist has obtained good results in the treatment of tuberculosis of the tongue, tuberculous fistulas and cold abscesses.

Resistance of Certain Bacteria to Penicillin

In his speech on "Some Biologic Properties of Antibiotics," Professor Chain dwells on the question of penicillin-resistance acquired by microbes. He stresses the fact that among all the bacteria studied, only the staphylococcus can be easily rendered resistant to penicillin in vitro. This acquired resistance is not always permanent, many strains reverting to their original sensitivity; but even during their period of adaptation to penicillin staphylococci lose their virulence. Professor Chain thinks that Treponema pallidum as well as staphylococci are more liable to become easily penicillin-resistant; studies on this subject are in progress. The danger of adaptation to penicillin becomes serious when concentrations of penicillin are not sufficient to destroy the microbes; hence, arises the important question of the appropriate doses of this antibiotic. Moreover, by comparing penicillin to streptomycin, under the action of which microbes become resistant after two to three consecutive cultures, he considers that penicillin, the toxicity of which is slight, is the ideal antibiotic.

Miscellaneous

Professor Henri Mondor has been made a member of the French Academy, to succeed Paul Valery. Chief of surgical clinics at the Salpétrière Hospital, he is the author of the well known book, "Urgent Diagnosis." He is also a popular writer and has published biographies of Dupuytren, Pasteur and Ambroise Paré.

ITALY

(From Our Regular Correspondent)

FLORENCE, Oct. 15, 1947.

The Italian Cardiologic Society

This society held its ninth national congress in Milan after a delay of three years caused by the war. Professor Villa was chairman. Professor A. Dalla Vota reported on the cardiovascular apparatus in endocrinopathy. One should consider under the term thyrotoxicosis Basedow's disease and the toxic nodular goiter, which may present three characteristic clinical pictures: (1) tachycardia, (2) primary arrhythmia and (3) cardiac insufficiency. The erethistic tachycardiac syndrome is characterized by tachycardia during sleep and at rest, in the absence of dyspnea, cyanosis and anginal attacks; it may be of many years' duration but without signs of cardiac decompensation. The heart is not much changed in size and shape. The electrocardiogram reveals sinus tachycardia with left ventricular prevalence, shortening of the conduction time (PQ) and of the duration of the electric systole (QT). In the primary arrhythmic syndrome one may observe total arrhythmia resulting from fibrillation and more rarely from flutter; annoying at first, this type of disease may be well tolerated as time

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goes on; there may be no precordial pain, dyspnea or cyanosis. In the third syndrome, decompensation of the right side of the heart may occur more often with angina and electrocardiographic changes.

While many of the symptoms are due to the action of the thyroid hormone on cardiac muscle fibers, other factors not related to the thyroid may cooperate in its effect on the circulation.

Antithyroid therapy is of greatest importance, but symptomatic treatment may be limited to the cases of circulatory insufficiency. Substances inhibiting the thyroid secretion should be employed, or roentgen radiation or thyroidectomy. In myxedema, which may occur spontaneously after total thyroidectomy or excessive irradiation, the heart may be enlarged and the aorta may show an increase in its caliber. The enlargement depends on the insufficiency of the thyroid hormone. The electrocardiogram will show low voltage with disappearance of the atrial P and the T waves, depending on the condition of the heart and on the lesser electric conductance of the skin. In these patients there is a characteristic difference between the radiologic picture and the absence of clinical signs of cardiac decompensation. This results from the fact that the heart in myxedema acts under fairly economic conditions considering the reduced intraorganic oxidation and the better utilization of oxygen after the slacking of the circulation. In contrast, action of the thyrotoxic heart is essentially uneconomic because of the increase in oxygen consumption. Oxygen may be utilized poorly because of the increase in the velocity of the circulation. According to the speaker, administration of the powdered entire gland or of the serum of patients with diffuse toxic goiter may be considered as the only effective method of treatment.

The parathyroids may produce changes in the cardiovascular apparatus, namely, tetany resulting from insufficiency of the hormone. In those patients the electrocardiographic alterations are pathognomonic and consist of shortening of the conduction time (TQ), modification of the T wave of coronary type and lengthening of the electric systole (QT). Administration of parathyroid hormone as well as that of calcium combined with massive doses of vitamin D_2 is recommended for treatment.

The speaker discussed Addison's disease and hyperadrenalism. The first syndrome is characterized by arterial hypotension and a soft, small pulse. The electrocardiogram may show a low voltage of the various waves, particularly of the P and T waves. Treatment consists in the administration of cortical hormone, sodium chloride and ascorbic acid. In hyperadrenalism one may observe symptoms characterized by high blood pressure, tachycardia, vasomotor excitability, hyperglycemia and increase in basal metabolism. After adrenalectomy, which is considered the most effective treatment, pressure is restored to normal. The gonads likewise act on the circulatory apparatus. In hypogenitalism in men one may observe the so-called straight hypoplastic heart associated with hypotension. In hypogenitalism in women one may observe a cardiovascular aspect dominated by hypoplasia and hypotrophy. Sex hormone therapy is effective, particularly with naturally occurring estrogenic substances and with synthetic estrus-producing compounds.

With regard to the pituitary, the posterior lobe is generally not responsible for circulatory disorders but limits itself to participating in a secondary way in the syndromes elicited by the anterior lobe. Atrophy of the latter may be manifested by "Simmonds' disease" (hypopituitary cachexia) with loss in weight and of sexual function, asthenia and a reduced basal metabolism. One may observe a definite drop in the arterial pressure, hypoplasia of the heart and aorta and absence of electrocardiographic alterations. Gigantism and acromegaly are related to the hyperfunction of the acidophile cells of the anterior lobe; in acromegaly the enlargement of the heart may reach high values.

Dalla Volta said that there is not sufficient proof of a direct action of insulin on the cardiovascular apparatus. The discussion on this subject was lively; the speaker replied to all questions.

Professor Lunedei reported on the second subject, "The Physiopathology of the Smaller Vessels." He prefers this terminology because of the difficulty of establishing a precise difference between capillaries and small arterial and venous vessels: in substance the capillary is formed by a tunica adventitia and by an endothelial lamina; it does not form part of the arterial and venous vessels, and the capillary system should be considered functional rather than anatomic. For that reason the capillary pathology is in reality the disease of each organ, individually. One may consider three aspects of the smaller vessels: variations in caliber, in permeability of the walls and in fragility. Changes in caliber depend on the state of the tissues: water exchange, nervous hormone regulation and functional activity. Tonic variations depending on epinephrine, vasopressin and the vasopressin-like substances of the posterior lobe of the hypophysis have been noted. Hormone regulation is important, either directly or through the action of substances of tissue metabolism, and although it varies from organ to organ the nervous one is more important. Sympathetic stimulation seems to determine a fall in tonus, which may be followed by a slow and not complete restoration of the arterial regulation. Surgical removal of the nerves results in extensive alterations of the capillaries and the procaine hydrochloride infiltration of the roots determines variations in dermographism. The dermographic reactions are accomplished through the peripheral nervous system and not by means of liberation of peripheral vasodilative substances. The histamine substances and those having a histamine-like action determine changes in the caliber which are induced by the neurogenic route. The allergic reactions may occur after the tissues have been giving off histamine-like substances. According to the speaker, many hemorrhagic phenomena are related to the tissue factor. The "string test" is a hemorrhagic test and not a test of capillary fragility. Professor Lunedei does not believe that capillaroscopy, which may furnish twenty-five different pictures, is of any importance, because capillaroscopy depends on endocrine, tissue, neurologic and other factors.

Professors Sisto, Flarer and Zironi participated in the discussion which followed Professor Lunedei's report.

It was decided that the next meeting of the Italian Cardiologic Association will be at Rapallo in 1948.

Antiallergic Action of Some Antibiotics

At the Roman Surgical Society, Professors Dogliotti and Lenti discussed the effects of treatment with penicillin and the sulfonamide compounds. In some cases a sudden disappearance of fever, subjective symptoms and the so-called functional phenomena occurs. According to Zironi, this result may be on an allergic basis, leaving the anatomicobacteriologic course unchanged. The speakers, however, proposed the hypothesis that penicillin and the sulfonamide drugs, in addition to a bacteriostatic and bactericidal action, exert a desensitizing and antiallergic action during the course of the infectious disease.

The speakers corroborated this hypothesis by experimental research and succeeded in modifying the tuberculous intradermal reaction by the local application of sulfonamide ointment. They demonstrated also that penicillin controls the anaphylactic shock in guinea pigs whether the drug is administered before the injection responsible for the shock or at the time of the sensitization. The importance of Dogliotti and Lenti's concepts was discussed likewise with regard to the use of massive doses of vitamin D_2 in pulmonary tuberculosis.

BRAZIL

(From Our Regular Correspondent)

RIO DE JANEIRO, Nov. 8, 1947.

Studies on Leprosy

A recent publication of data about leprosy in Brazil with statistical studies by Drs. J. Aguiar Pupo, Duarte do Pateo, Rubem Azulay, Nelson S. Campos, Luiz M. Bechelli, Gilberto Mangeon and Vandyck del Favero, who are in charge of the problems connected with the disease in several states, discloses information about patients confined in institutions or at home. In the household, children are much more dangerous to their parents, as sources of contamination, than the latter are to the former, the situation being expressed numerically by the ratio 68.15 to 31.85. Mothers pay a much higher toll than fathers (64.36 to 35.64). These facts reinforce the concept of leprosy as a family disease and point out the importance of the home environment. In 1,905 cases from the state of São Paulo, 1,374 (or 14.12 per cent) were husbands infected by wives and wives infected by husbands. Epidemiologically, husbands and wives behave as adults in regard to infection with leprosy, and thus the incidence of the disease is lower among them than among children. In cases in which leprosy could be attributed to contamination from husband to wife or from wife to husband, the largest number had had the disease from one to ten years. In those cases, however, patients who have had the disease for an average of fifteen years are the most likely to propagate leprosy.

Of 38,606 cases registered 1920 to 1945, 2,640 patients are foreign born and 35,966 are Brazilians, or a ratio of 1 to 13, while the ratio of foreign-born persons in the general population is 1 to 30 according to the last census (1940). This means a higher incidence of leprosy among the foreign born part of the population. But a much higher difference is disclosed when one considers the incidence of the diverse clinical forms of leprosy. Of the 25,952 cases in which it was possible to differentiate the clinical form of the disease between lepromatous and tuberculoid, 23,170 (or 89.21 per cent) are of the former type, against 2,782 (or 10.79 per cent) of the latter, a ratio of 8.33 to 1. A similar study of the two forms of the disease in the Brazilian and in the foreign-born patients shows that 90.17 per cent are of the lepromatous type and 9.83 per cent of the tuberculoid type in the former group (a ratio of 9.18 to 1), and 79.45 per cent of the lepromatous type and 20.55 per cent of the tuberculoid type in the latter group (a ratio of 3.77 to 1). Dr. Azulay's conclusion is that the much lower relative incidence of the lepromatous form of the disease in the foreign-born patients is due to a higher degree of resistance to leprosy. Since the foreign-born patients are very heterogenous as to race and nationality, it seemed important to separate them into two groups according to the leprosy situation in the country of origin: countries in which there is no more leprosy, and countries in which disease foci are older than those of Brazil. (Patients from countries where the leprosy situation is similar to that of Brazil have been excluded from the comparison). The relative incidence of tuberculoid leprosy in the foreign-born patients of the first group is expressed by the ratio 4.41 to 1 (141 patients of the lepromatous form to 32 of the tuberculoid form), against the ratio of 3.72 to 1 (1,500 patients of the lepromatous form to 403 patients of the tuberculoid form) for the foreign-born patients from countries whose foci are older than those of Brazil. This country is a comparatively recent focus of leprosy, as is apparent from the low relative incidence of the tuberculoid form of the disease (ratio 8.33 to 1) in the grand total of 25,952 patients in whom it was possible to differentiate the lepromatous and the tuberculoid forms, the incharacteristic types having been disregarded. The good situation of the leprosy problem in the state of São Paulo is expressed by the extremely high relative incidence of the tuberculoid form in cases of the disease discovered among contacts during the last years (397 lepromatous cases to 197 tuberculoid cases, or a ratio of 2.06 to 1).

The high incidence of leprosy among children derives from the great promiscuity within the contaminating family focus. If the children are taken out of the contaminating focus, the majority of cases among them occur within three years, as has been seen at the Santa Teresinha Asylum for Children of Lepers, of São Paulo, where the children are subjected to repeated and careful examinations. The average incidence of leprosy among those children was found to be 21.5 per cent, which is considered a low figure for contacts of that kind. The average incidence of leprosy among all contact children in the state of São Paulo is 27.7 per cent, a figure which contrasts with the much higher ones found, as a rule, in other states of Brazil and in other countries.

A special study of the significance of the results of bacterioscopic examinations of the nasal mucus and cutaneous lesions in tuberculoid and trophoneurotic forms of leprosy was made with 1,156 patients (726 tuberculoid and 430 trophoneurotic). The nasal mucus from 399 tuberculoid and 81 trophoneurotic patients was examined for the first time, with 1 positive result for the former patients (0.25 per cent) and 2 positive results for the latter (2.46 per cent). Specimens were taken for a first examination from 398 tuberculoid and 81 trophoneurotic patients, with 5 positive results for the former patients (1.25 per cent) and 11 positive results for the latter (13.58 per cent). The results of repeated examinations are still more interesting. A greater percentage of positivity is observed among the trophoneurotic patients than among the tuberculoid, a result that can be expressed numerically by the ratio of 4 to 1. The examination of specimens from cutaneous lesions, among the tuberculoid as well as among the trophoneurotic, gives a greater number of positive results than the examination of specimens from nasal mucus. As a rule, the percentage of positive results either among the tuberculoid patients or among the trophoneurotic increases as the monthly examinations are repeated, from the first to the fifth examination (during the first months of the acute stage of the disease), and decreases afterward as the case becomes chronic. A simultaneous positivity of the nasal mucus and the cutaneous lesions is seldom observed, and this positivity occurs more frequently among the trophoneurotic cases.

Experimental American Trypanosomiasis

Dr. J. Pellegrini, of the Pharmacological Department, University of Minas Gerais, published a report on his electrocardiographic study of experimental American trypanosomiasis with the aim of ascertaining the possible effect of the previous intravenous injection of an antigen prepared from Trypanosoma cruzi (Schizotrypanum cruzi). In the first part of his paper Dr. Pellegrini reported 2 cases of intraventricular block in dogs with experimental trypanosomiasis in the chronic stage of the disease. With 1 of the animals the record obtained three hundred seventy-five days after the onset of the disease showed an S-type curve of intraventricular block or right bundle branch block similar to the tracings frequently found in human cases of the trypanosomatic myocarditis in the chronic stage. With another dog signs of congestive heart failure (edema, ascitis, dyspnea and collateral circulation) were observed a year after the onset of the disease. The cardiac decompensation increased progressively until death four hundred eighteen days after the onset of the disease. In the second part of the paper the author reported that he studied the electrocardiograms of 4 dogs suffering from experimental trypanosomiasis in the chronic stage before and after the intravenous injection of an antigen of T. cruzi prepared from cultures of the flagellate. The electrocardiographic records made at varying intervals up to forty-eight hours after the injection of the antigen showed no significant alterations. This means the absence of electrocardiographic changes which could demonstrate the sensitization of the animal's myocardium by the antigen.

Correspondence

WHY USE CALAMINE?

To the Editor:—One of the commoner ingredients of local soothing applications is calamine. Originally, this product was a crude zinc carbonate that was mined on the British Islands. It was pink, probably because of the presence of a small amount of iron salts. For the past twenty years this product has not been in general use. Since the publication of the fifth edition ot the National Formulary the specifications for calamine have changed. In the seventh edition of this volume[1] it is stated: "Prepared calamine is zinc oxide with a small amount of ferric oxide." The pink color can be varied with the amount of iron salts added. Zinc oxide U. S. P. is now generally used in preparing calamine.

I have not been able to ascertain just how much difference the change from zinc carbonate to zinc oxide might make on its clinical effectiveness.

It is believed, however, that the use of both zinc oxide and calamine in the same preparation is useless, inasmuch as they are approximately the same. Other than the pink color produced, one might as well use more zinc oxide and omit the calamine.

ROY L. KILE, M.D., Cincinnati.

HELP FOR BRITISH PHYSICIANS

To the Editor:—I have just returned from a trip to England and Continental Europe, having made the visit as a representative of the American Rheumatism Association. I was directed to invite the rheumatologists of Great Britain and Europe to attend the 1949 meeting of the American Rheumatism Association. I was privileged to go as the American representative to the European Congress held at Copenhagen last September.

There is a situation among the physicians of England which has given me no small concern. From my own experience among the English people and especially among the physicians, with many of whom I became well acquainted, I know that a number are suffering from the want of clothing and good food, particularly food in the form of fats, proteins and carbohydrates. After I became rather well acquainted with some of the English physicians, they confessed to me that they were worried over the need for adequate food and clothing for their families and their patients. The English people were gracious to me. I spent many days and nights in their homes and saw and partook of their scanty rations. In most of the homes heat was not available, and I am sure you would be amazed at the real need as I saw it.

I discussed the situation carefully and frankly with the editor of the *British Medical Journal*. I suggested to him the possibility of having each American physician adopt a British physician's family—not as charity but as a friendly gesture. The American physician and his family could make a project of such a program and could send every two weeks or so a box containing canned meats, protein, cooking fats, sugar, candy, woolen clothing for the children and clothing, such as shirts, underwear, socks, and handkerchiefs, for the adults. Dr. Clegg stated that such a program, he was sure, would be much appreciated. He thought it would be better accepted if it were not publicized in the papers.

I told Dr. Clegg that I would get in touch with you on this problem on my return to America. He thought that this would be an excellent idea and felt that it would be really wonderful if we can persuade American physicians to adopt British physicians' families. He would be glad to supply names of families if you think that this great humanitarian and friendly gesture can be undertaken. I know from personal experience the dire need of many families, for I spent two months in England and Scotland. I might also add that I visited European countries, including France, Denmark, Holland and Norway, where the people were also badly in need of food.

Mrs. Gillmor and I have forty boxes practically ready to send to physicians in Great Britain, Scotland and Denmark.

Recently I talked with our representative in the United States Congress, the Honorable C. Jasper Bell, and he thought that if the idea can be carried out it will be an excellent method of procuring for the needy of those countries immediate and direct relief. He will investigate what can be done about the abolishment of the postage fees, which are as expensive generally as the food and materials sent.

C. STEWART GILLMOR, M.D., Kansas City, Mo.

WAYS OF MAKING FOOD RESTRICTION EASIER

To the Editor:—The recent pleas of national leaders that Americans should eat less and save food for Europe make it seem worth while to consider ways and means of making food restriction easier. First, I would call attention to the value of eating food earlier in the day than is the general custom, particularly in urban communities. In short, as I explained in a paper on "Central Factors in Hunger" (*Am. J. Physiol.* **82**:665, 1927), I found that the intensity of the desire to eat is related to central nutritional needs. The desire to eat can therefore be kept moderate and easy to control by eating food relatively early in the day, so that the digested food will mainly be absorbed during the day. Large meals eaten late in the day are digested and absorbed mainly during the night, when the least food is utilized and the excess is likely to be deposited as fat. An accumulation of fat obviously does not serve to reduce the desire to eat.

Studies made after discovery of the foregoing way of controlling the desire to eat revealed that the amount of food appreciated (basal appetite) is related to the hydration of the organism (Explanation of Appetite, *Am. J. Digest. Dis.* **11**: 71, 1944; **11**:101, 1944, and Appetite and Obesity, ibid. **12**: 156, 1945). The amount of food that one will enjoy can therefore be controlled to some extent by controlling hydration. In my opinion, hydration can best be limited by restricting the salt intake, limiting the use of highly mineralized vegetables and restricting the carbohydrate intake more or less.

Bulky foods and nonnutritive bulk formers can be used to dispel the sense of emptiness that is often experienced when the dietary intake is restricted. I formerly used large amounts of bulky materials in attempts to satisfy myself with less food, but I found that I could dispense with such materials entirely by eating most of my food relatively early in the day and controlling hydration by nutritional means.

However, some degree of self control or self denial is apparently necessary under any circumstances, if overeating in the midst of plenty is to be avoided. The present world food situation makes overeating practically a crime, but overeating (and excessive drinking) is practically synonymous with civilization. As I pointed out on a previous occasion (Some Factors in Nutritional Determination of History, *Science* **95**:251, 1942), the rise and decline of civilizations can be explained as the result of the use and misuse of a surplus of food. The use of surplus food for self indulgence is evidence of a lack of self control; the immediate future will undoubtedly reveal whether Western civilization is willing and able to control itself or whether it is doomed like all previous civilizations.

FREDERICK HOELZEL,
Department of Physiology,
University of Chicago.

1. The National Formulary, ed. 7, Philadelphia, American Pharmaceutical Association, 1942, p. 69.

Medical Motion Pictures

FILM REVIEW

Therapy of Erythroblastosis Fetalis by Exchange Transfusion. 16 mm., color, silent, 400 feet, showing time sixteen minutes. Prepared in 1946 by Alexander S. Wiener, M.D., and I. B. Wexler, M.D., Transfusion Division and Department of Pediatrics, the Jewish Hospital of Brooklyn. Procurable on loan from: The Author, 64 Rutland Road, Brooklyn 25.

This portrayal of the technic of replacement transfusion in the treatment of erythroblastosis fetalis shows how part of the blood collected from the donor is distributed in 50 cc. tubes and centrifuged. The plasma is removed by pipet, and the packed cells are returned to the rest of the blood. The volume of the mixture is then made up to 500 cc. with saline solution. This technic of open manipulation cannot be recommended; more desirable would have been the use of a modern closed circuit process with suction through a pipet inserted in a rubber stopper. The purpose of the procedure described is to reduce what the author calls "conglutinin," a term in disfavor among those who follow the trend of Rh terminology. Heparin is used to facilitate the flow of blood from the severed radial artery. One questions whether this potent anticoagulant may not contribute to the bleeding tendency of some newborn infants.

The film would have gained in value if a word of caution and a few rules showing how necessary it is to establish exact indications for the operation were included. The photography is fair. This film will be of interest to obstetricians, pediatricians, surgeons and general practitioners.

At least three different technics of exchange transfusion for treatment of erythroblastosis fetalis have been advocated. Wallerstein uses the longitudinal sinus. Diamond withdraws and injects blood through a catheter inserted in the umbilical vein. Wiener removes blood by cutting the radial artery and injects it through the saphenous vein. Each method has its advocates, and only time will show how these methods will fare when tried by others than the originators. Diamond's technic seems the simplest but can only be applied during the first few hours after birth. Wiener's technic would appear to be the method of choice when the umbilical catheter technic cannot be used.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARD OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of the boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL Dec. 13, page 1027.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I & II.* Various centers, Feb. 16-18. *Part III.* Chicago and New York, Jan. 14-16. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia 2.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Oral.* New York, April 12-15. *Written.* Various Centers, July 16. Final date for filing application is Jan. 16. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York 22.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* San Francisco, April. Chicago, June. Final date for filing application is Feb. 1. *Written.* Oct. 18. Final date for filing application is June 1. Asst. Sec.-Treas., Dr. W. A. Werrell, 1 West Main St., Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, May or June. Final date for filing application is Feb. 1. Sec., Dr. W. J. German, 310 Cedar St., New Haven, Conn.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral.* Baltimore, May. Chicago, Oct. *Written.* Various centers, Jan. 14. Sec., Dr. S. Judd Beach, 56 Ivie Road, Cape Cottage, Me.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Part I.* April-May. Applications are accepted for the next examination until Jan. 15, 1948. Sec., Dr. Francis M. McKeever, 1136 W. 6th St., Los Angeles 14.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* Chicago, June 16-19. Final date for filing application is Feb. 1. Sec., Dr. D. M. Lierle, University Hospitals, Iowa City.

AMERICAN BOARD OF PATHOLOGY: Philadelphia, March 8-10. Final date for filing application is March 1. Sec., Dr. Robert A. Moore, 507 Euclid Ave., St. Louis, Mo.

AMERICAN BOARD OF PEDIATRICS: Philadelphia, Jan. 9-11. Sec., Dr. Lee F. Hill, 718 Royal Union Bldg., Des Moines 9.

AMERICAN BOARD OF PLASTIC SURGERY: Examinations are given in April and November of each year in the home town of applicants. Sec., Dr. Robert H. Ivy, 1930 Chestnut St., Philadelphia.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: *Oral.* Washington, D. C., May 13-15, 1948. Final date for filing application is Feb. 15. Sec., Dr. F. J. Braceland, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF RADIOLOGY: *Oral.* Chicago, June 1948. Final date for filing application is March 1. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Health Insurance: "Confined Within Doors" Clause Construed.—The plaintiff filed an action against the defendant health insurance company to recover indemnity for a "confining illness" under the provisions of a policy purchased by the plaintiff. From a judgment in favor of the insurance company the plaintiff appealed to the court of appeals of Tennessee.

The plaintiff was stricken with a coronary thrombosis on the evening of Oct. 14, 1944; he was taken the next morning to the clinic of Dr. O. N. Bryan, and from then until the trial of this case he was under continuous treatment by Dr. Bryan, who was stipulated to be an expert. For the first three or four weeks part of the treatment was absolute rest in bed except for his visits to the physician's office. Thereafter part of the treatment was short walks in the fresh air and sunshine to prevent deterioration of the heart muscles from continuous lying in bed. During this period the plaintiff was unable to do any work. In his application for the policy he had stated his occupation as that of a grocer, and Dr. Bryan, describing the plaintiff's condition, expressed the opinion that the plaintiff was totally and permanently disabled from performing the duties of that occupation or from doing any work requiring physical exertion. The defendant conceded that the plaintiff was totally disabled but contended by way of defense that he was not confined continuously within doors and regularly visited therein by his physician, as required by the insurance policy.

At first the plaintiff went to his doctor's office once every three or four days and later about once a week. In good weather he took short walks on his doctor's advice. After the defendant denied liability, the plaintiff went to town on the bus a number of times—once or twice to defendant's office, once to the insurance commissioner's office, several times to his lawyer's office and once to testify in court. The question is, said the court, should the plaintiff's claim be denied because, instead of staying continuously within doors and being there treated, he went out to the extent stated for his treatment and in connection with his claim, his total disability being conceded?

The court of appeals pointed out that there are two lines of decisions construing the provisions of health insurance policies, a liberal and a strict construction. After reviewing a number of the prior cases on the subject, the court concluded that the Tennessee decisions are in line with the liberal view and committed to the rule of a liberal construction in favor of the insured. The court of appeals quoted a prior Tennessee decision which said: "We are of opinion, considering the purpose of the policy, that the provision that insured should be paid benefits only while necessarily confined to his bed and there visited professionally by a licensed physician was intended more as a protection against malingerers than as a condition precedent to the right of recovery." The court therefore concluded that the complainant was entitled to recover the indemnity for total disability from "confining illness." He was totally disabled, said the court, and substantially confined continuously within doors. The fact that he went out to the extent stated for purposes of his treatment and his claim did not break the continuity of his confinement. Accordingly the judgment in favor of the defendant insurance company was reversed.—*Brandt v. Mutual Ben. Health & Acc. Ass'n, 202 S. W. (2d) 827 (Tenn., 1947).*

V 13
1947

POSTGRADUATE COURSES FOR VETERAN AND CIVILIAN PHYSICIANS

Compiled by the Council on Medical Education and Hospitals for Period January 1 to July 15, 1948

Medical schools, hospitals, state medical societies and other medical educational institutions and organizations are providing the Council with a growing body of information on courses designed primarily to meet the needs of returning medical officers. These have been incorporated into the lists on these pages. They are not specifically designated for veterans, since most if not all of them may also be open to interested civilian physicians. Furthermore, all courses listed which were not designed primarily for physician veterans are also open to qualified returning medical officers.

Note that most courses are listed only once, without cross indexing, so that in some instances a prospective student should look under more than one heading for a desired course.

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Postgraduate Courses for Practicing Physicians—January 1 to July 15, 1948

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	ALLERGY		
Graduate Division of the School of Medicine, University of Southern California, Los Angeles 7 At: Los Angeles County Hospital	Allergy	6 weeks, Wednesday evenings, April 7, 1948	$ 25.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	One Month Personal Course in Allergy (2 of these courses under different instructors)	1 month, full time, every month	200.00
	Six Months Personal Course in Allergy (2 of these courses under different instructors)	6 months, full time, when vacancy occurs	500.00
University of Michigan Medical School, Department of Postgraduate Medicine, 1313 E. Ann St., Ann Arbor	Allergy	5 days, full time, May 24-28, 1948	30.00
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16 At: Kings County Hospital	Allergy	8 weeks, part time, beginning April 1948	20.00
At: Beth El Hospital	Allergy	8 weeks, part time, beginning April 1948	20.00
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Mount Sinai Hospital	Allergy (Medicine PM-36)	1 week, part time, Feb. 17-25, 1948	40.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Allergy	2 months, part time, Tuesdays arranged	50.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	Allergy	3 weeks, full time, April 12-30, 1948	200 00
	Allergy	8 sessions, Jan. 9-Feb. 27, 1948	25.00
Graham-Thomas Clinic, 201 W. Franklin St., Richmond 20, Va.	Course of Training in Clinical Allergy	12 months, Jan. 1, 1948	Not given
	Course of Training in Clinical Allergy	12 months, July 1, 1948	Not given
	ANATOMY		
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Surgical Anatomy	10 weeks, part time, April 22, 1948	125.00
University of Maryland School of Medicine, Lombard and Greene Sts., Baltimore, Md.	General Anatomy "A"	Arranged [1]	Arranged [2]
	Surgical Anatomy "B"	15 weeks, 2 days a week, part time, January 1948	150.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15	Neuro-anatomy	3 weeks, full time, June 7-26, 1948	100.00
Tufts College Medical School, Postgraduate Division, 30 Bennet St., Boston 11 At: Pratt Diagnostic Hospital	Surgical Anatomy	8 weeks, half time, May 3-June 25, 1948	150.00
	Surgical Anatomy	8 weeks, part time, March 1, 1948	200.00 [7] 5.00 [8]
University of Michigan Medical School, Department of Postgraduate Medicine, 1313 E. Ann St., Ann Arbor	Anatomy	1 day a week, Feb. 12-May 27, 1948	30.00
Cornell University Medical College, 1300 York Ave., New York 21	Course in Surgical Anatomy [10]	3 weeks, full time, Feb. 2-21, 1948	150.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Anatomy of the Abdomen	100 hours, arranged	150.00
	Applied Anatomy for the General Surgeon	250 hours, arranged	375.00
	Anatomy of the Thorax	100 hours, arranged	150.00
	Applied Anatomy for the Anesthetist	125 hours, arranged	275.00
	Applied Anatomy for the Otolaryngologist	150 hours, arranged	275.00
	Anatomy of the Urogenital System	130 hours, arranged	200.00
	Anatomy for the Orthopedic Surgeon	100 hours, arranged	150.00
New York Polyclinic School and Hospital, 345 W. 50th St., New York 19	Head and Neck Dissection	6 weeks, part time, arranged	150.00

References will be found on page 1112.

Postgraduate Courses for Practicing Physicians—January 1 to July 15, 1948—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	ANATOMY—Continued		
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	Surgical Anatomy as Applied to Operative Gynecology (Cadaver)[10]	12 sessions, Jan. 20-Feb. 14, 1948 [3]	200.00
New York University College of Medicine, 477 First Ave., New York 16	Basic Sciences, Anatomy (C-1) (1)	8 weeks, part time, January 1948	115.00
	Basic Sciences, Anatomy (C-1) (2)	10 weeks, part time, January 1948	115.00
	Basic Sciences, Anatomy (C-1) (3)	12 weeks, part time, January 1948	150.00
	Basic Sciences, Anatomy (C-1) (4)	16 weeks, part time, January 1948	200.00
	Basic Sciences, Anatomy (C-1) (5)	8 weeks, full time, January 1948	225.00
	Basic Sciences, Anatomy (C-1) (6)	24 weeks, part time, January 1948	300.00
New York University College of Medicine, 477 First Ave., New York 16 At: New York Eye and Ear Infirmary	Anatomy of the Temporal Bone [19]	1 month, 2 mornings a week, arranged	60.00
American Association of Anatomists, 2109 Adelbert Road, Cleveland, Ohio At: Western Reserve University School of Medicine, Department of Anatomy	Surgical Anatomy [4]	1-6 months, afternoons, continuous	Not given
University of South Dakota Medical School, Vermillion	Clinical Applications of Anatomy	3 months, part time, start any time	None
University of Texas Medical Branch, Post-Graduate Division 912 Avenue B, Galveston	Basic Medical Sciences	5 days, Feb. 23-28, 1948	25.00
	ANESTHESIOLOGY		
George Washington University School of Medicine, 1335 H St. N.W., Washington 5, D. C.	Anesthesia	1 week, full time, Feb. 23-27, 1948	50.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	One Month Practical Course in Ether and Nitrous Oxide	1 month, 1st of every month	125.00
	Two Weeks Personal Course in Regional and Intravenous Anesthesia	2 weeks, full time, every 2 weeks	150.00
	One Month Practical Course in Ether Nitrous Oxide, Ethylene and Cyclopropane Anesthesia	1 month, full time, 1st of every month, by appointment	200.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Clinical Anesthesiology	3 months, arranged	200.00
New York Polyclinic School and Hospital, 345 W. 50th St., New York 19	Anesthesia	3 months, full time, January 1948	300.00
	Anesthesia	3 months, full time, April 1948	300.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	Anesthesia	2 weeks, full time, arranged	125.00
New York University College of Medicine, 477 First Ave., New York 16 At: Bellevue Hospital At: New York Eye and Ear Infirmary	Regional Anesthesia (A-1)	2 weeks, full time, May 3-14, 1948	200.00
	Resuscitation and Preventive Anesthesia [19]	2 half days (successive 8 hours), arranged	50.00
Graduate School of Medicine, University of Pennsylvania, 237 Medical Laboratories, Philadelphia 4 At: Graduate Hospital	Segmental Neuralgias: Relief by Regional Anesthesia [10]	3 weeks, 1st of each month	200.00
	ARTHRITIS		
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16 At: Jewish Hospital	Arthritis	8 weeks, part time, beginning April 1948	20.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	Arthritis and Allied Rheumatic Disorders	8 sessions, Jan. 6-Feb. 24, 1948	45.00
	Arthritis and Allied Rheumatic Disorders	5 days, full time, June 7-11, 1948	55.00
New York University College of Medicine, 477 First Ave., New York 16 At: Bellevue Hospital	Arthritis and Rheumatic Disorders (A-2)	6 weeks, part time, April 1948	100.00
	BACTERIOLOGY		
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Bacteriology	3 months, half time, arranged	100.00
	Immunology	6 weeks, half time, arranged	50.00
	Parasitology	6 weeks, half time, arranged	75.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	Clinical Bacteriology and Serology	1 month, mornings, Feb. 2-28, 1948	100.00
New York University College of Medicine, 477 First Ave., New York 16	Basic Sciences, Bacteriology (C-2)	16 weeks, part time, March 1, 1948	75.00
	BASIC SCIENCES		
Graduate Division of the School of Medicine, University of Southern California, Los Angeles 7 At: Los Angeles County Hospital	Basic Science Courses—Bacteriology (Course 736)	6 weeks, Tuesdays, part time, Feb. 3, 1948	50.00
	Basic Science Courses—Biochemistry (Course 736)	16 weeks, Tuesdays, part time, March 30, 1948	50.00
Tulane University of Louisiana Division of Graduate Medicine, 1430 Tulane Ave., New Orleans 13	Basic Science as Applied to Orthopedics	5 months, full time, Feb. 2-June 1948	300.00
Tufts College Medical School, Postgraduate Division, 30 Bennet St., Boston 11 At: Pratt Diagnostic Hospital	Review of Basic Sciences	8 weeks, full time, Jan. 5-Feb. 28, 1948	200.00 [7] 5.00 [8]
University of Michigan Medical School, 1313 E. Ann St., Ann Arbor	Clinical Application of the Basic Sciences	4 weeks, Jan. 5-30, 1948	100.00
University of Minnesota Medical School, Department of Postgraduate Education, Minneapolis 14 At: Center for Continuation Study	Basic Sciences and Their Clinical Applications	3 months, full time, Jan. 5-March 18, 1948	160.65
	Basic Sciences and Their Clinical Applications	3 months, full time, March 29-June 11, 1948	160.65
University of Oklahoma School of Medicine and University Hospitals, 800 N. E. 13th St., Oklahoma City 4	Post Internship Educational Program in Basic Sciences	8 courses, 18 hours each, continuously, twice a week	None
Southwestern Medical College of Southwestern Medical Foundation, 2211 Oak Lawn, Dallas	Postgraduate Course in the Basic Sciences (Anatomy, Pathology, Physiology, Pharmacology, Bacteriology and Biochemistry)	12 weeks, full time, Jan. 5-May 14	25.00 [19]
University of Texas Medical Branch, 912 Avenue B, Galveston	Basic Sciences	Spring 1948	Not given
University of Wisconsin Medical School, 418 N. Randall Ave., Madison 6	The Basic Sciences	Arranged	160.00 [11]

References will be found on page 1112.

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Postgraduate Courses for Practicing Physicians—January 1 to July 15, 1948—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
BIOCHEMISTRY			
University of South Dakota Medical School, Vermillion	Clinical Applications of Biochemistry	3 months, part time, start any time	None
Baylor University College of Medicine, 509 Lincoln Ave., Houston, Texas	Residents' Seminar in Clinical Biochemistry	24 hours per year, every 3 weeks	Not given [42]
CARDIOVASCULAR DISEASES			
George Washington University School of Medicine, 1335 H St. N.W., Washington 5, D. C.	Cardiovascular Diseases (including Electrocardiography)	2 weeks, full time, March 29-April 9, 1948	100.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Cardiovascular Diseases	10 days, part time, April 7, 1948	80.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15	Cardiology	3½ months, full time, Feb. 2-May 15, 1948	450.00
At: Beth Israel Hospital			
At: Massachusetts General Hospital	Cardiovascular Diseases	12 months, April 1, 1948	600.00
At: Peter Bent Brigham Hospital	Clinical Heart Disease	1 month, full time, July 1-31, 1948	125.00
Tufts College Medical School, Postgraduate Division, 80 Bennet St., Boston 11	Cardiology	5 days, full time, April 5, 1948	40.00 [7] 5.00 [8]
At: Pratt Diagnostic Hospital			
University of Michigan Medical School, Department of Postgraduate Medicine, 1313 E. Ann St., Ann Arbor	Diseases of the Heart	5 days, full time, April 5-9, 1948	30.00
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16	Clinical Cardiology and Advanced Electrocardiography	4 weeks, part time, April 1948	20.00
At: Israel Zion Hospital			
At: Jewish Hospital	Electrocardiography and Clinical Cardiology	5 weeks, part time, April 1948	20.00
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32	Advanced Cardiology (Medicine PM-61)	4 months, part time, Jan. 27-June 8, 1948	250.00
At: Montefiore Hospital			
At: Mount Sinai Hospital	Cardiovascular Diseases (Medicine PM-31)	7 weeks, part time, Feb. 13-March 29, 1948	110.00
	Bedside Clinics in Heart Disease (Medicine PM-46)	6 weeks, part time, Feb. 16-March 29, 1948	30.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Cardiology	10 weeks, Wednesday mornings, every 10 weeks except July and August	150.00
New York Polyclinic School and Hospital, 345 W. 50th St., New York 19	Cardiology	3 weeks, part time, arranged	75.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	Cardiology	7 sessions, Jan. 5-Feb. 16, 1948	45.00
	Cardiology	4 weeks, full time, May 3-28, 1948	175.00
	Peripheral Vascular Diseases	8 sessions, Jan. 6-Feb. 24, 1948	30.00
	Peripheral Vascular Diseases	5 days, full time, April 26-30, 1948	55.00
New York University College of Medicine, 477 First Ave., New York 16	Cardiovascular Diseases (A-3)	12 weeks, part time, Jan. 8-March 25, 1948	50.00
At: Beth Israel Hospital	Cardiovascular Diseases (A-3)	12 weeks, part time, April 1-June 17, 1948	50.00
St. Francis Sanatorium for Cardiac Children, Roslyn, N. Y.	Comprehensive Postgraduate Course in Rheumatic Fever and Rheumatic Heart Disease [5]	2 weeks, full time, June 1948	75.00
Graduate School of Medicine, University of Pennsylvania, 237 Medical Laboratories, Philadelphia 4	Cardiology [6]	8 Thursdays, beginning January 1948	80.00
At: Pennsylvania and Philadelphia General Hospitals			
Baylor University College of Medicine, 509 Lincoln Ave., Houston, Texas	Cardiology [6]	8 Thursdays, beginning April 1948	80.00
	Refresher Course in Cardiology	3 or 4 days, Jan. 5-8, 1948	25.00
CHEST DISEASES			
Graduate Division of the School of Medicine, University of Southern California, Los Angeles 7	Pulmonary Diseases (Course 740)	12 weeks, Wednesday evenings, April 1948	50.00
At: Los Angeles County Hospital and Barlow Sanatorium			
George Washington University School of Medicine, 1335 H St. N.W., Washington 5, D. C.	Thoracic Diseases	2 weeks, full time, March 1-12, 1948	100.00
	Thoracic Medicine	1 week, full time, March 8-12, 1948	50.00
Mississippi State Sanatorium, Sanatorium, Miss.	Diseases of the Chest and Internal Medicine	4 weeks, all year	None
	Diseases of the Chest and Internal Medicine	6 months, all year	None
American and Massachusetts Trudeau Societies, Harvard University, Tufts Medical and Boston University Medical Schools, Boston	Postgraduate Course in Thoracic Diseases	2 weeks, April 5-17, 1948	100.00
American Trudeau Society, 1790 Broadway, New York	Postgraduate Course in Thoracic Diseases	1 week, March 22-27, 1948	50.00
At: Herman Kiefer Hospital, Detroit, Mich.			
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32	Diseases of the Chest (Medicine PM-63)	4½ months, part time, Jan. 2-May 14, 1948	60.00
At: Montefiore Hospital			
At: Mount Sinai Hospital	Diseases of the Chest (Medicine PM-37)	2½ weeks, part time, March 10-27, 1948	60.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Pulmonary Tuberculosis	3 weeks, full time, arranged	175.00
At: Otisville Sanatorium, Otisville, N. Y.			
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	Acute and Chronic Diseases of the Chest	8 sessions, Jan. 8-Feb. 26, 1948	45.00
Council on Postgraduate Medical Education, American College of Chest Physicians, 500 N. Dearborn St., Chicago 10, and The Laennec Society of Philadelphia	Diseases of the Chest (Newer Aspects)	1 week, Mar. 15-20	50.00 [22] 90.00 [22]
At: Philadelphia			
Wisconsin Anti-Tuberculosis Association, 1018 N. Jefferson St., Milwaukee 2	Essentials of Chest X-Ray Films and Their Interpretation	6 weeks, part time, Jan. 8-Feb. 12, 1948 [9]	Not given
	Essentials of Chest X-Ray Films and Their Interpretation	6 weeks, part time, Feb. 18-March 25, 1948 [9]	Not given
DERMATOLOGY AND SYPHILOLOGY			
College of Medical Evangelists Graduate School of Medicine, Boyle and Michigan Ave., Los Angeles 33	Dermatology	10 weeks, Tuesday evenings, beginning Jan. 6, 1948	40.00
Graduate Division of the School of Medicine, University of Southern California, Los Angeles 7	Dermatology and Syphilology (Course 763)	12 weeks, 1 evening a week, January 1948	50.00
At: Los Angeles County Hospital	Dermatology and Syphilology (Course 763)	12 weeks, 1 evening a week, April 1948	50.00
	Modern Treatment of Syphilis (Course 765)	12 weeks, Thursday evenings, Jan. 8, 1948	50.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Clinical Dermatology	2 weeks, every 2 weeks	75.00
	Dermatology [10]	12 months, full time, when places are available	1,000.00
	Dermatology	2 weeks, full time, April 26-June 7, 1948	100.00

References will be found on page 1112.

Postgraduate Courses for Practicing Physicians—January 1 to July 15, 1948—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
DERMATOLOGY AND SYPHILOLOGY—Continued			
University of Kansas School of Medicine, Kansas City, Kans. and Kansas Medical Society and State Board of Health At: University of Kansas School of Medicine	Dermatology	4 days, Feb. 16-19, 1948	20.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15 At: Massachusetts General Hospital	Dermatology	1 month, full time, Jan.-May 1948	100.00 [11]
	Dermatology and Syphilology	1 year, full time, April 1, 1948	600.00
Tufts College Medical School, Postgraduate Division, 30 Bennet St., Boston 11 At: Pratt Diagnostic Hospital	Dermatology II	28 hours, April 12, 1948	40.00 [7] 5.00 [8]
University of Minnesota Medical School, Department of Postgraduate Education, Minneapolis 14 At: Center for Continuation Study	Dermatology	3 days, full time, some time in March 1948	15.00
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Mount Sinai Hospital	Venereal and Skin Diseases (Medicine PM-40)	6 days, part time, March 29-April 3, 1948	30.00
New York Polyclinic School and Hospital, 345 W. 50th St., New York 19	Dermatology and Syphilology	6 weeks, part time, arranged	100.00
	Dermatology and Syphilology	3 months, part time, arranged	150.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	Seminar in Dermatological Histopathology [10]	5 days, full time, May 10-14, 1948	75.00
	Symposium on Dermatology and Syphilology [10]	5 days, full time, May 17-21, 1948	100.00
DIABETES			
Graduate Division of the School of Medicine, University of Southern California, Los Angeles 7 At: Los Angeles County Hospital	Diabetes Mellitus (Course 739)	6 weeks, Monday evenings, March 29, 1948	25.00
Tufts College Medical School, Postgraduate Division, 30 Bennet St., Boston 11 At: Pratt Diagnostic Hospital	Diabetes	5 days, full time, March 22, 1948	40.00 [7] 5.00 [8]
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16 At: Israel Zion Hospital At: Jewish Hospital	The Complications of Diabetes Mellitus	12 weeks, part time, April 1948	20.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	Diabetes	8 sessions, April 1948	20.00
	Diabetes Mellitus, Nephritis and Hypertension	5 days, full time, April 18-23, 1948	55.00
	Diabetes Mellitus, Nephritis and Hypertension	8 sessions, Jan. 8-Feb. 26, 1948	45.00
New York University College of Medicine, 477 First Ave., New York 16 At: Lenox Hill Hospital	Diabetes Mellitus	6 weeks, part time, January 1948	50.00
ELECTROCARDIOGRAPHY			
Graduate Division of the School of Medicine, University of Southern California, Los Angeles 7 At: Los Angeles County Hospital	Electrodiagnosis and Electromyography (Course 778)	4 weeks, full time, March 1948	100.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Electrocardiography and Heart Disease	10 weeks, part time, April 7, 1948	125.00
	Four Weeks Personal Course in Electrocardiography and Heart Disease	4 weeks, full time, Feb. 16-May 3, 1948	175.00
Michael Reese Hospital Postgraduate School, 29th St. and Ellis Ave., Chicago 16	Electrocardiographic Interpretation	12 weeks, Tuesday evenings, Feb. 17-May 4, 1948	Not given
Tulane University of Louisiana Division of Graduate Medicine, 1430 Tulane Ave., New Orleans 13	Electrocardiography	2 weeks, full time, Jan. 5-17, 1948	50.00
Tufts College Medical School, Postgraduate Division, 30 Bennet St., Boston 11 At: Pratt Diagnostic Hospital	Electrocardiography I	5 days, full time, March 8, 1948	40.00 [7] 5.00 [8]
	Electrocardiography II	3 days, Jan. 12, 1948	25.00 [7] 5.00 [8]
University of Michigan Medical School, Department of Postgraduate Medicine, 1313 E. Ann St., Ann Arbor	Electrocardiographic Diagnosis	5½ days, full time, pending	50.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Electrocardiography	2 weeks, part time, Spring 1948	100.00
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16 At: Beth El Hospital At: Israel Zion Hospital	Electrocardiography and Heart Sound Recording	5 weeks, part time, April 1948	20.00
	Clinical Cardiology and Advanced Electrocardiography	4 weeks, part time, April 1948	20.00
At: Jewish Hospital	Clinical Electrocardiography	5 weeks, part time, April 1948	20.00
	Electrocardiography and Clinical Cardiology	5 weeks, part time, April 1948	20.00
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Mount Sinai Hospital	Intensive Course in Elementary Electrocardiography (Medicine PM-41)	6 days, full time, Jan. 26-31, 1948	60.00
	Intensive Course in Advanced Electrocardiography (Medicine PM-42)	6 days, full time, April 19-24, 1948	60.00
New York Polyclinic School and Hospital, 345 W. 50th St., New York 19	Electrocardiography	2 weeks, part time, arranged	75.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	Electrocardiography	5 days, full time, March 15-19, 1948	55.00
New York University College of Medicine, 477 First Ave., New York 16	Advanced Electrocardiography (B-3)	16 weeks, part time, Spring 1948	125.00
	Electrocardiography (A-5)	12 weeks, part time, Jan. 8-March 25, 1948	40.00
At: Beth Israel Hospital	Electrocardiography (A-5)	12 weeks, part time, April 1-June 17, 1948	40.00
	Practical Electrocardiography for the Practicing Physician (A-6)	1 week, afternoons, January 1948	65.00
At: Bellevue Hospital	Practical Electrocardiography for the Practicing Physician (A-6)	1 week, afternoons, April 1948	65.00
University of Oregon Medical School, 3181 S. W. Marquam Hill Road, Portland 1	Electrocardiography	5 days, full time, May 24-28, 1948	50.00
ELECTROENCEPHALOGRAPHY			
University of Illinois, College of Medicine, 1853 W. Polk St., Chicago	Electroencephalography for Physicians	3 months, full time, March 15-June 15, 1948	200.00
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32	Electroencephalography and Electromyography	3 months, full time, Jan. 1-March 31, 1948	150.00

References will be found on page 1112.

Postgraduate Courses for Practicing Physicians—January 1 to July 15, 1948—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	ELECTROENCEPHALOGRAPHY—Continued		
Graduate School of Medicine, University of Pennsylvania, 237 Medical Laboratories, Philadelphia 4	Electroencephalography	36 hours, Thursdays, January 1948	150.00
At: Graduate Hospital and Pennsylvania Institute	Electroencephalography	36 hours, Thursdays, March 1948	150.00
	Electroencephalography	36 hours, Thursdays, May 1948	150.00
University of Texas Medical Branch, 912 Avenue B, Galveston	Electroencephalography	Arranged	25.00 [12]
	ENDOCRINOLOGY		
Association for the Study of Internal Secretions, 1200 N. Walker St., Oklahoma City, Okla.	Post-Graduate Course in Endocrinology	6 days, Feb. 23-28, 1948	100.00
At: Los Angeles			
College of Medical Evangelists, Graduate School of Medicine, Boyle and Michigan Ave., Los Angeles 33	Endocrinology	8 weeks, Monday evenings, April 5, 1948	30.00
University of Michigan Medical School, Department of Postgraduate Medicine, 1313 E. Ann St., Ann Arbor	Metabolism and Endocrinology	5 days, full time, April 19-23, 1948	30.00
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16	Applied Endocrinology	5 weeks, part time, beginning April 1948	20.00
At: Jewish Sanitarium and Hospital for Chronic Diseases			
At: Beth El Hospital	Endocrine Diseases and Disorders in Children and Adolescents	8 weeks, part time, beginning April 1948	20.00
At: Jewish Hospital	Disorders of the Endocrine System	6 weeks, part time, beginning April 1948	20.00
	Female Sex Endocrinology	10 weeks, part time, beginning April 1948	20.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Endocrinology	3 weeks, full time, May 1948	150.00
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32	Endocrinological Diseases (Medicine PM-39)	2½ weeks, part time, March 8-24, 1948	30.00
At: Mount Sinai Hospital			
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	Diseases of the Thyroid and Other Endocrine Glands, and Disorders of Nutrition	8 sessions, Jan. 9-Feb. 27, 1948	45.00
	Gynecological Endocrinology	24 sessions, Jan. 6-Feb. 28, 1948	150.00
	Gynecological Endocrinology	24 sessions, March 2-April 27, 1948	150.00
	Gynecological Endocrinology	24 sessions, May 4-June 26, 1948	150.00
	ENDOSCOPY		
George Washington University School of Medicine, 1335 H St. N.W., Washington 5, D. C.	Thoracic Surgery and Endoscopy	1 week, full time, March 1-5, 1948	50.00
American Broncho-Esophagological Association, 700 N. Michigan Ave., Chicago	Broncho-esophagology and Laryngeal Surgery [10]	2 weeks, Feb. 16-28, 1948	150.00
At: University of Illinois College of Medicine			
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15	Endoscopy	2 months, monthly, arranged	200.00 [13]
At: Massachusetts General Hospital			
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32	Gastroscopy (Medicine PM-2)	2 months, part time, arranged	250.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	Cystoscopy and Endoscopy	15 sessions, Jan. 5-Feb. 6, 1948	75.00
	Cystoscopy and Endoscopy	15 sessions, Feb. 16-March 22, 1948	75.00
	Cystoscopy and Endoscopy	15 sessions, April 5-May 7, 1948	75.00
	Cystoscopy and Endoscopy	15 sessions, May 17-June 21, 1948	75.00
New York University College of Medicine, 477 First Ave., New York 16	Broncho-Esophagology on Animals [10]	12 days in 2 weeks, March 1948	250.00
At: New York Eye and Ear Infirmary	Broncho-Esophagology [10]	12 days in 2 weeks, March 1948	250.00
	Bronchoesophagology and Laryngeal Surgery [10]	12 days, full time, March or April 1948	250.00
At: Beth Israel Hospital	Peroral Endoscopy (a-7) [10]	16 weeks, part time, Monday afternoons, Spring 1948	175.00
Temple University School of Medicine, 3400 N. Broad St., Philadelphia	Laryngology and Broncho-Esophagology	2 weeks, full time, arranged	250.00
At: Temple University Hospital			
Graduate School of Medicine, University of Pennsylvania, 237 Medical Laboratories, Philadelphia 4	Bronchoesophagology, Gastroscopy and Laryngeal Surgery	2 weeks, Jan. 12, 1948	250.00
At: Affiliated Hospitals	Broncho-Esophagology, Gastroscopy and Laryngeal Surgery	2 weeks, June 1948	250.00
	FRACTURES		
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Fractures	10 weeks, part time, March 24, 1948	125.00
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16	Fractures	10 weeks, part time, beginning April 1948	20.00
At: Kings County Hospital			
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Fractures and Allied Trauma	1 month, full time, Spring semester	150.00
	GASTROENTEROLOGY		
Graduate Division of the School of Medicine, University of Southern California, Los Angeles 7	Advanced Gastroenterology (Course 746)	12 weeks, Monday evenings, Jan. 5, 1948	50.00
At: Los Angeles County Hospital			
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Gastroenterology	2 weeks, full time, April 12, 1948	125.00
	Gastroenterology	2 weeks, full time, May 24, 1948	125.00
	Gastroscopy and Gastroenterology	2 weeks, full time, March 29, 1948	200.00
	Gastroscopy and Gastroenterology	2 weeks, full time, April 19, 1948	200.00
	Gastroscopy and Gastroenterology	2 weeks, full time, June 28, 1948	200.00
Tulane University of Louisiana Division of Graduate Medicine, 1430 Tulane Ave., New Orleans 13	Review of Gastroenterology	1 week, full time, March 1-6, 1948	25.00
University of Michigan Medical School, Department of Postgraduate Medicine, 1313 E. Ann St., Ann Arbor	Diseases of the Gastrointestinal Tract	5 days, full time, May 17-21, 1948	30.00
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16	Gastroenterology	5 weeks, part time, beginning April 1948	20.00
At: Beth El Hospital			
At: Greenpoint Hospital	Gastroenterology	6 weeks, part time, beginning April 1948	20.00
At: Jewish Hospital	Gastroenterology	5 weeks, part time, beginning April 1948	20.00

References will be found on page 1112.

Postgraduate Courses for Practicing Physicians—January 1 to July 15, 1948—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	GASTROENTEROLOGY—Continued		
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Mount Sinai Hospital	Gastrointestinal Diseases (Medicine PM-32)	6 weeks, part time, Feb. 2-March 10, 1948	80.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Gastroenterology	1 month, part time, Spring 1948	100.00
	Gastroscopy	2 weeks, part time, arranged	200.00
New York Polyclinic School and Hospital, 345 W. 50th St., New York 19	Gastroenterology	6 weeks, part time, arranged	50.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	Gastroenterology	3 weeks, full time, March 29-April 16, 1948	150.00
	Gastroenterology	8 sessions, Jan. 7-Feb. 25, 1948	45.00
New York University College of Medicine, 477 First Ave., New York 16 At: Bellevue Hospital	Clinical Gastroenterology (A-11)	20 weeks, part time, Wednesday afternoons, Feb. 4-June 16, 1948	100.00
At: Beth Israel Hospital	Gastroenterology (A-10)	8 weeks, part time, Mondays and Fridays, Winter and Spring 1948	65.00
At: Lenox Hill Hospital	Gastroenterology (A-9)	7 weeks, part time, Monday and Friday mornings, January 1948	60.00
University of Oregon Medical School, 3181 S. W. Marquam Hill Road, Portland 1	Gastrointestinal Diseases	5 days, full time, Feb. 9-13, 1948	50.00
Graduate School of Medicine, University of Pennsylvania, 237 Medical Laboratories, Philadelphia 4 At: Graduate Hospital	Clinical Gastroenterology [10]	500 hours, February 1948	400.00
	Clinical Gastroenterology [10]	500 hours, June 1948	400.00
Meharry Medical College, 1005 18th Ave. N. at Meharry Blvd., Nashville, Tenn.	Postgraduate Course in Gastroenterology	5 days, full time, Jan. 12-16, 1948	25.00
	GERIATRICS		
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Mount Sinai Hospital	Geriatrics (Medicine PM-47)	3½ months, part time, Feb. 5-May 20, 1948	65.00
	HEMATOLOGY		
Graduate Division of the School of Medicine, University of Southern California, Los Angeles 7 At: Los Angeles County Hospital	Hematology (Course 738)	12 weeks, Monday evenings, Jan. 5, 1948	50.00
University Medical Extension, University of California, San Francisco 22	Hematology and Blood Disorders	4 days, Feb. 16-19, 1948	Not given
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Hematology	10 weeks, part time, April 7, 1948	100.00
	Personal Course in Hematology	1 week, full time, May 10, 1948	100.00
Tufts College Medical School, Postgraduate Division, 30 Bennet St., Boston 11	Hematology II	2 weeks, full time, June 7-19, 1948	100.00
University of Michigan Medical School, Department of Postgraduate Medicine, 1313 E. Ann St., Ann Arbor	Diseases of the Blood	5 days, full time, May 10-14, 1948	30.00
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16 At: Jewish Hospital	Clinical Hematology	8 weeks, part time, beginning April 1948	20.00
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Montefiore Hospital	Clinical Hematology (Medicine PM-64)	4½ months, part time, Feb. 3-June 15, 1948	75.00
	Advanced Hematology	3½ months, part time, Feb. 5-May 13, 1948	75.00
At: Mount Sinai Hospital	Hematology (Medicine PM-35)	5 weeks, part time, Feb. 26-April 3, 1948	65.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Hematology	2 months, Tuesday afternoons	50.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	Clinical Hematology	8 sessions, Jan. 7-Feb. 25, 1948	30.00
New York University College of Medicine, 477 First Ave., New York 16 At: Lenox Hill Hospital	Hematology (A-13)	6 weeks, part time, Wednesday afternoons, Winter and Spring 1948	50.00
Graduate School of Medicine, University of Pennsylvania, 237 Medical Laboratories, Philadelphia 4 At: Bryn Mawr Hospital	Clinical and Laboratory Hematology	6 weeks, full time, Feb. 1, 1948	200.00
	Clinical and Laboratory Hematology	6 weeks, full time, April 1, 1948	200.00
	HOSPITAL ADMINISTRATION		
University of Kansas School of Medicine, 39th St. and Rainbow Blvd., Kansas City 3, and Kansas Medical Society and State Board of Health At: University of Kansas School of Medicine	Hospital Administration	3 days, May 25-27, 1948	8.00
	INDUSTRIAL HEALTH		
Connecticut State Medical Society, 258 Church St., New Haven and Yale University School of Medicine	Connecticut Clinical Congress, Course in Industrial Medicine	Not given	Variable
Yale University School of Medicine, Institute of Occupational Medicine and Hygiene, New Haven 11, Conn.	Second Postgraduate Course Industrial Medicine and Surgery	10 weekly sessions (90 min. each), Feb 3-April 8, 1948	15.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	Symposium on Industrial Medicine	5 days, full time, Feb. 16-20, 1948	55.00
University of Pittsburgh School of Medicine, Bigelow Blvd., Pittsburgh, Pa.	Industrial Hygiene Engineering	32 hours, Feb. 1, 1948	20.00
	Fellowship in Industrial Medicine	18 months, full time, beginning any time in 1948	None [14]
	Industrial Toxicology	32 hours, Feb. 1, 1948	20.00
State Medical Society of Wisconsin, 917 Tenney Bldg., Madison 3	Industrial Health Clinic [22]	5-10 clinics, April or May 1948	Not given
	INTERNAL MEDICINE		
College of Medical Evangelists, Graduate School of Medicine, Boyle and Michigan Ave., Los Angeles 33	Differential Diagnosis and Treatment of Internal Diseases	12 weeks, Monday evenings, Jan. 5, 1948	50.00
Graduate Division of the School of Medicine, University of Southern California, Los Angeles 7 At: Los Angeles County Hospital	Clinical Review of Internal Medicine (Course 730)	12 weeks, full time, Jan. 5, 1948	250.00
	Internal Medicine (Course 731)	9 months, full time, Jan. 5, 1948	Not given
	Recent Advances in Internal Medicine (Course 745)	12 weeks, 1 evening a week, January 1948	50.00
	Recent Advances in Internal Medicine (Course 745)	12 weeks, 1 evening a week, April 1948	50.00
University Medical Extension, University of California, San Francisco 22 At: University of California Medical Center	Internal Medicine and General Surgery	5 days, full time, June 21-25, 1948	Not given
George Washington University School of Medicine, 1335 H St. N.W., Washington 5, D. C.	Infectious Diseases	1 week, full time, March 15-19, 1948	50.00
	Internal Medicine	7 weeks, full time, March 1-April 16, 1948	350.00
	Metabolic Diseases	1 week, full time, March 22-26, 1948	50.00

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Postgraduate Courses for Practicing Physicians—January 1 to July 15, 1948—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	INTERNAL MEDICINE—Continued		
Emory University School of Medicine, 50 Armstrong St., Atlanta, Ga. At: Emory University Hospital and Grady Memorial Hospital	General Internal Medicine	2 weeks to 1 year, arranged	125.00 [15] 12.00 [15]
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Internal Medicine	2 weeks, full time, April 26, 1948	75.00
	Internal Medicine	2 weeks, full time, June 7, 1948	75.00
Tulane University of Louisiana Division of Graduate Medicine, 1430 Tulane Ave., New Orleans 13	Review of Internal Medicine	2 weeks, full time, Jan. 19-31, 1948	50.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15 At: Boston City Hospital	Internal Medicine	6 months, full time, June 1, 1948	100.00 [11]
At: Massachusetts General Hospital	Internal Medicine	6 weeks, full time, June 21-July 30	200.00
Tufts College Medical School, Postgraduate Division, 30 Bennet St., Boston 11 At: Pratt Diagnostic Hospital	Clinical Medicine	1 month, mornings, Jan. 5-31, 1948	60.00 [7] 5.00 [8]
	Clinical Medicine	1 month, mornings, Feb. 2-28, 1948	60.00 [7] 5.00 [8]
	Clinical Medicine	1 month, mornings, April 5-May 1, 1948	60.00 [7] 5.00 [8]
	Clinical Medicine	1 month, mornings, May 3-29, 1948	60.00 [7] 5.00 [8]
	Clinical Medicine	1 month, mornings, June 1-26, 1948	60.00 [7] 5.00 [8]
	Internal Medicine	3 months, full time, Jan. 5, 1948	250.00 [7] 5.00 [8]
	Internal Medicine	6 months, full time, Jan. 5, 1948	500.00 [7] 5.00 [8]
	Internal Medicine	3 months, full time, April 5, 1948	250.00 [7] 5.00 [8]
	Internal Medicine	1 month, April 5, 1948	100.00 [7] 5.00 [8]
	Rheumatic Diseases	5 days, full time, March 1, 1948	40.00 [7] 5.00 [8]
University of Michigan Medical School, Department of Postgraduate Medicine, 1313 E. Ann St., Ann Arbor	Clinical Internal Medicine	Every Thursday, Jan.-April 22, 1948	Not given
	Metabolism and Endocrinology	5 days, full time, April 19-23, 1948	30.00
New York State Department of Health, 76 State St., Albany 7 At: Various Teaching Centers	Intensive Postgraduate Course in Rheumatic Fever and Rheumatic Heart Disease [16]	2 weeks, arranged	Varies
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16 At: Jewish Hospital	Hypertension and Nephritis	8 weeks, part time, beginning April 1948	20.00
	Peripheral Vascular Diseases	4 weeks, part time, beginning April 1948	20.00
Columbia University, College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Montefiore Hospital	Peripheral Vascular Diseases (Medicine PM-65)	4 months, part time, Feb. 12-June 10, 1948	75.00
At: Mount Sinai Hospital	Symposium on Internal Medicine (Medicine PM-30)	2 months, full time, Feb. 2-April 3, 1948	350.00
	Diseases of the Liver (Medicine PM-33)	10 days, part time, Feb. 2-11, 1948	35.00
	Diseases of the Kidneys (Medicine PM-34)	10 days, part time, Feb. 9-18, 1948	15.00
	Diseases of Metabolism (Medicine PM-38)	2 weeks, part time, Feb. 26-March 9, 1948	40.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	Diseases of the Liver and Biliary Tract	8 sessions, Jan. 7-Feb. 27, 1948	30.00
	Diseases of the Liver, Biliary Tract and Pancreas—Introductory Course	6 days, Wednesdays, May 5-June 9, 1948	60.00
	Psychological Aspects of Internal Medicine	8 sessions, Jan. 9-Feb. 27, 1948	25.00
	Seminar in Internal Medicine	8 weeks, full time, Jan. 5-Feb. 27, 1948	300.00
	Symposium on Internal Medicine	10 days, full time, June 14-25, 1948	100.00
New York University College of Medicine, 477 First Ave., New York 16 At: Bellevue Hospital	Present Day Practice in Rheumatic Disorders (A-17)	3 days, full time, January 1948	60.00
	Internal Medicine (B-5)	4 weeks, part time, Jan. 12-April 1948	60.00
	Internal Medicine (B-5)	8 weeks, part time, Jan. 12-April 1948	100.00
	Internal Medicine (B-5)	12 weeks, part time, Jan. 12-April 1948	150.00
	Internal Medicine (B-6)	3 months, full time, January 1948	250.00
	Internal Medicine (B-6)	6 months, full time, January 1948	350.00
At: Beth Israel Hospital	Internal Medicine (A-14)	4 weeks, part time, Winter and Spring 1948	75.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Internal Medicine	1 month, full time, monthly except July and August	150.00
University of Vermont College of Medicine, Pearl St., College Park, Burlington	Internal Medicine [17]	4 weeks, minimum, arranged	500.00 [18]
University of Wisconsin Medical School, 418 N. Randall Ave., Madison 6	Observation Courses in Medicine, for Specialists [10]	Arranged	100.00 [11]
	MALIGNANT DISEASES		
American Cancer Society (City Division), State Medical Association, Los Angeles At: Los Angeles	Refresher Course in Neoplastic Diseases	2 days, Late January 1948 [9]	None
At: San Francisco	Refresher Course in Neoplastic Diseases	2 days, Late January 1948 [9]	None
Los Angeles County Medical Association, 1930 Wilshire Blvd., Los Angeles 5	Bi-Monthly Cancer Lecture Series	Twice a month, variable	None
University Medical Extension, University of California, San Francisco 22 At: University of California Medical Center	Cytological Diagnosis of Cancer by Smear Technique	2 weeks, full time, June 21-July 2, 1948	Not given
Colorado State Department of Health, Cancer Control Committee, and Colorado State Medical Society, 535 Republic Bldg., Denver At: Denver	Cancer Refresher Courses	3 days, February 1948	None
	Cancer Refresher Courses	3 days, April 1948	None
Colorado State Medical Society, Rocky Mountain Cancer Foundation, Colorado Chapter of American Cancer Society, 535 Republic Bldg., Denver At: Denver	Rocky Mountain Cancer Conference	2 days, full time, July 14-15, 1948	None
Iowa State Medical Society, 505 Bankers Trust Bldg., Des Moines 9 and American Cancer Society, Iowa Division At: Burlington, Iowa	Cancer Institute	1 day, Spring 1948	None

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Postgraduate Courses for Practicing Physicians—January 1 to July 15, 1948—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
MALIGNANT DISEASES—Continued			
University of Kansas School of Medicine, 39th St. and Rainbow Blvd., Kansas City 3, and State Board of Health and Kansas Medical Society At: University of Kansas Medical Center	Refresher Course in Radiology and Cancer	3 days, full time, Jan. 19-21, 1948	None
National Cancer Institute, Bethesda 14, Md. At: Various Hospitals throughout country	Traineeship in Diagnosis and Treatment of Cancer	1-3 years	None [19]
North Dakota Field Army for Cancer, North Dakota State Medical Association, Bismarck At: University of Minnesota	Refresher Course in Cancer for General Practitioners	3 days, Jan. 2-4, 1948	None
New York State Department of Health, Albany 7, Medical Society of the State of New York, and American Cancer Society, New York State Division At: Recognized Cancer Centers	Postgraduate Fellowships—Cancer	3 months, arranged	Varies
Cornell University Medical College, 1300 York Ave., New York 21	Course in Cytologic Diagnosis of Cancer	12 days, full time, March 8-20, 1948	100.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	The Basic Problems in Cancer Therapy for Surgeons [10]	11 days, full time, Feb. 24-March 6, 1948	125.00
Council of Rochester Regional Hospitals, Inc., 800 Reynolds Arcade Bldg., Rochester, N. Y. At: Cornell University Medical College, New York	Cytological Diagnosis of Cancer	Not given	None [43]
Tennessee State Medical Association, Postgraduate Committee, 4 S. Dunlap, University Center, Memphis 3 At: Various (45) County seat towns in Tennessee	Cancer	10 weeks, part time, continuous	10.00 2.50 [49]
University of Texas Medical Branch, 912 Avenue B, Galveston	Tumor Symposia	1 day, Jan. 24, 1948	25.00 [12]
Medical College of Virginia, 12th and Marshall Sts., Richmond	Malignant Growths	Uncertain, February 1948	Not given
State Medical Society of Wisconsin, 917 Tenney Bldg., Madison 3 At: Five different cities in Wisconsin	Cancer Clinics [22]	Not definite, July 1948	Not given
MEDICINE, GENERAL			
Medical College of Alabama, 620 S. 20th St., Birmingham	Postgraduate Seminar in Medicine, Surgery, Obstetrics and Gynecology	3 days, February 1948	None
College of Medical Evangelists, Graduate School of Medicine, Boyle and Michigan Ave., Los Angeles 33	Varicose Veins	6 weeks, Thursday evenings, March 4, 1948	25.00
Los Angeles County Medical Association, 1930 Wilshire Blvd., Los Angeles 5 At: San Fernando	Practical Medicine, Weekly Lecture Series	1½ hours weekly, Mondays, continuous	None
Graduate Division of the School of Medicine, University of Southern California, Los Angeles 7 At: Los Angeles County Hospital	Recent Advances in Diagnosis and Treatment (Course 743)	12 weeks, Thursday evenings, January 1948	50.00
	Recent Advances in Diagnosis and Treatment (Course 743)	12 weeks, Thursday evenings, March 1948	50.00
University Extension, University of California Medical School, Los Angeles 24 At: U. S. Naval Hospital, San Diego	Medicine	3 days, April 26-28, 1948	50.00
Colorado State Medical Society, Republic Bldg., Denver At: University of Colorado Medical School and other hospitals, and Shirley-Savoy Hotel	Midwinter Postgraduate Clinics of the Colorado State Medical Society (13th Annual)	3 days, full time, March 3-5 1948	5.00 [8]
Yale University School of Medicine, 333 Cedar St., New Haven 11, Conn.	Atypical Growth—Discussion Group	Twice a month, Jan.-June 1948	None
	Medical Clinic	Thursdays	None
	Staff Rounds	Saturdays	None
	Residency Training Program	3 months or longer, throughout the year	500.00 [46]
At: Veterans Administration Hospital, Newington, Conn.	Residency Training Program	Throughout the year	None
George Washington University School of Medicine, 1335 H St. N.W., Washington 5, D. C.	Miscellaneous Topics; Recent Advances in Medicine	1 week, full time, April 12-16, 1948	50.00
University of Georgia School of Medicine, University Place, Augusta	Postgraduate course for Negro Physicians (of Georgia)	5 days, June 28-July 2, 1948	None
Chicago Medical Society, 30 N. Michigan Ave., Chicago 2 At: Palmer House	Varicose Veins	3 days, part time, every week	40.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Annual Clinical Conference of Chicago Medical Society (an intensive postgraduate course for the general practitioner)	4 days, full time, March 2-5, 1948	5.00 [29]
Institute of Medicine of Chicago, 86 E. Randolph St., Chicago	Where We Stand Today in Medicine (Lectures)	2nd and 4th Friday afternoons, Jan. 9-May 28, 1948	None
Illinois State Medical Society, Post-Graduate Committee, 224 S. Main St., Monmouth	Postgraduate Conference	1 day, April 8, 1948	None
Indiana Board of General Practice of Medicine, Inc., Lafayette Life Bldg., Lafayette	Graduate Training in the General Practice of Medicine	8 months, once a month, March 3, 1948	None
	Graduate Training in the General Practice of Medicine	8 months, once a month, March 24, 1948	None
	Graduate Training in the General Practice of Medicine	8 months, once a month, April 14, 1948	None
	Graduate Training in the General Practice of Medicine	8 month, once a month, May 5, 1948	None
Iowa State Medical Society, 505 Bankers Trust Bldg., Des Moines 9 At: Burlington At: Creston	Postgraduate Courses—3 lectures	Not given, Spring 1948	Not given
	Postgraduate Courses—5 lectures	Not given, Spring 1948	Not given
University of Kansas School of Medicine, 39th St. and Rainbow Blvd., Kansas City 3, State Board of Health and Kansas Medical Society At: University of Kansas Medical Center	Refresher Course in Internal Medicine, Psychiatry and Dermatology	4 days, full time, Feb. 16-19, 1948	25.00
University of Louisville School of Medicine, 101 W. Chestnut St., Louisville	Postgraduate Refresher Course in Medicine and Surgery	5 days, June 1948	25.00
Massachusetts Medical Society, 8 The Fenway, Boston At: Cambridge	Postgraduate Lecture Course	9 weeks, part time, March 8-May 5, 1948	None
Tufts College Medical School, Postgraduate Division, 30 Bennet St., Boston 11 At: Pratt Diagnostic Hospital	General Refresher	3 months, full time, April 5, 1948	300.00 [7] 5.00 [8]
	Mixed Service	1 year,[21] Jan. 5, 1948	500.00 [7] 5.00 [8]
	Mixed Service	1 year,[21] April 5, 1948	500.00 [7] 5.00 [8]
	Mixed Service	1 year,[21] June 6, 1948	500.00 [7] 5.00 [8]
University of Michigan Medical School, Department of Postgraduate Medicine, 1313 E. Ann St., Ann Arbor	Clinical Exercises for Practitioners	Every Wednesday, Jan-May 5, 1948	Not given
	Metabolism and Endocrinology	5 days, full time, April 19-23, 1948	30.00
Kansas City Southwest Clinical Society, 630 Shukert Bldg., Kansas City 6, Mo.	Kansas City Southwest Clinical Society Meeting	4 days, Oct. 4-7, 1948	Not given

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Postgraduate Courses for Practicing Physicians—January 1 to July 15, 1948—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
MEDICINE, GENERAL—Continued			
Rutgers University, New Brunswick, N. J. and Medical Society of New Jersey, Newark At: Cooper Hospital, Camden, N. J.	Postgraduate Medical Program	3 years, part time, each quarter, 1948	30.00 [15]
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16 At: Greenpoint Hospital	Sterility	12 sessions, beginning April 1948	20.00
New York Polyclinic School and Hospital, 345 W. 50th St., New York 19	General Practitioner's Course	6 weeks, full time, arranged	100.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	Problems in Diagnosis	7 sessions, Jan. 5-Feb. 16, 1948	45.00
New York University College of Medicine, 477 First Ave., New York 16 At: Lenox Hill Hospital	General Review Course for General Practitioners (A-12)	4 weeks, full time, not given	150.00
Council of Rochester Regional Hospital, Inc., 800 Reynolds Arcade Bldg., Rochester At: Hospitals outside of Rochester	Formal Clinical Conferences and Teaching Institutes	Not given, monthly	None
At: Eleven County Regions, New York	Postgraduate Training (3 Medical Fellowships)	4 months, arranged	None [44]
University of North Carolina School of Medicine and Extension Division, Chapel Hill, and North Carolina Division of American Cancer Society At: Greensboro	Postgraduate Extension Courses in Medicine	6 weeks, part time, March 1-April 15, 1948	20.00
At: Lumberton	Postgraduate Extension Courses in Medicine	6 weeks, part time, Jan. 15-March 1, 1948	20.00
At: Raleigh	Postgraduate Extension Courses in Medicine	6 weeks, part time, March 1-April 15, 1948	20.00
At: Salisbury	Postgraduate Extension Courses in Medicine	6 weeks, part time, Jan. 15-March 1, 1948	20.00
Frank E. Bunts Educational Institute and Cleveland Clinic, Euclid Ave. at 93rd St., Cleveland	Diseases of Blood Vessels and Lymphatics	2½ days, March 18-20, 1948	10.00
The Medical Society of the State of Pennsylvania, 500 Penn Ave., Pittsburgh At: Various cities	Refresher Course (Annual Postgraduate Course)	6 weeks, 1 day each week, April-2nd week in May, 1948	25.00 [22] 50.00 [23]
Medical Society of the State of Pennsylvania, 230 State St., Harrisburg At: Allentown	Graduate Education Institute of The Medical Society of the State of Pennsylvania	5 weeks, 1 day a week, April 6, 1948 (beginning)	25.00 [24]
At: Harrisburg	Graduate Education Institute of The Medical Society of the State of Pennsylvania	5 weeks, 1 day a week, April 8, 1948 (beginning)	25.00 [24]
At: Johnstown	Graduate Education Institute of The Medical Society of the State of Pennsylvania	5 weeks, 1 day a week, April 6, 1948 (beginning)	25.00 [24]
At: Oil City	Graduate Education Institute of The Medical Society of the State of Pennsylvania	5 weeks, 1 day a week, April 8, 1948 (beginning)	25.00 [24]
At: Wilkes-Barre	Graduate Education Institute of The Medical Society of the State of Pennsylvania	5 weeks, 1 day a week, April 6, 1948 (beginning)	25.00 [24]
At: Williamsport	Graduate Education Institute of The Medical Society of the State of Pennsylvania	5 weeks, 1 day a week, April 8, 1948 (beginning)	25.00 [24]
Philadelphia County Medical Society, Postgraduate Institute, 310 S. 21st St., Philadelphia 3	Symposium on Modern Diagnosis and Treatment	4 days, full time, April 20-23, 1948	5.00 [25]
Dallas Southern Clinical Society, Medical Arts Bldg., Dallas 1, Texas	17th Annual Spring Clinical Conference	4 days, full time, March 15-18, 1948	20.00
University of Vermont College of Medicine, Pearl St., College Park, Burlington	General Practice	12 weeks, part time, arranged	500.00 [17]
University of Vermont College of Medicine, Pearl St., College Park, Burlington and Vermont State Medical Society, Rutland At: Burlington	May Clinical Meeting [17]	2 days, May 1, 1948	None [8]
University of Virginia, Department of Medicine, Charlottesville	General Medicine	1 week, full time, April 1948	Not given
Medical College of Virginia, 12th and Marshall Sts., Richmond	Symposium on Diagnosis	Not given, April 1948 (tentative)	Not given
	Postgraduate Course for Negro Physicians	Not given, June 1948	Not given
Jackson Clinic, 16 S. Henry St., Madison, Wis. At: Methodist Hospital	Postgraduate Clinic Program	4 hours, every 2 months	None
State Medical Society of Wisconsin, 917 Tenney Bldg., Madison 3 At: Various centers in Wisconsin	General Postgraduate Clinics in Internal Medicine, Pediatrics and Obstetrics [22]	Not definite, latter part of May 1948	Not given
NEUROLOGY AND PSYCHIATRY			
College of Medical Evangelists, Graduate School of Medicine, Boyle and Michigan Ave., Los Angeles 33	Neurology	8 weeks, Thursday evenings, Jan. 8, 1948	30.00
	Functional Neurology	8 weeks, Tuesday evenings, Feb. 3, 1948	30.00
University Extension, University of California Medical School, Los Angeles 24 At: Birmingham General Hospital, U. S. V. A., Van Nuys, Calif.	Neurology	1 week, April 26-30, 1948	50.00
Graduate Division of the School of Medicine, University of Southern California, Los Angeles 7 At: Los Angeles County Hospital	Psychosomatic Medicine (Course 742)	12 weeks, Wednesday evenings, January 1948	50.00
University of Colorado Medical School and Hospitals, 4200 E. 9th Ave., Denver 7 At: Colorado Psychopathic Hospital	Psychosomatic Medicine	1 week, June 1948	Arranged
Connecticut State Medical Society, 258 Church St., New Haven and Yale University School of Medicine	Connecticut Clinical Congress Course in Psychiatry	Not given	Variable
	Connecticut Postgraduate Seminar of Neuropsychiatry	Not given, April 26, 1948	Varies
Joint Committee of Connecticut State Mental Hospitals and Yale University School of Medicine, 333 Cedar St., New Haven 11, Conn.	Clinical Neurology	3 weeks, Jan. 5-26, 1948	Not given
	Clinical and Social Psychiatry and Psychology	7 weeks, Feb. 2-March 24, 1948	Not given
	Therapy in Psychiatry	2 weeks, March 29-April 12	Not given
	Pediatric Psychiatry	1 week, April 19-26, 1948	Not given

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Postgraduate Courses for Practicing Physicians—January 1 to July 15, 1948—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
NEUROLOGY AND PSYCHIATRY—Continued			
Yale University School of Medicine, 333 Cedar St., New Haven 11, Conn.	Psychiatric Case Conferences	Fridays	None
	Statistics for Psychiatrists	Fridays	None
	Psychiatric Clinic	Fridays	None
	Brain Tumor Registry; Refresher Course for specialty work in neurosurgery, clinical neurology, neuropathology and neuropsychiatry	Arranged	Varies
	Neurological Study Unit. Lectures and Conferences	Tuesdays	None
	Residency Training Program	3 months or longer throughout the year	500.00 [18]
Catholic University of America, Department of Psychology and Psychiatry, Washington, D. C.	Case Seminar in Psychotherapy	Arranged, Tuesdays, Jan. 6-June 16, 1948	400.00 [18] 12.50 [25]
	Child Psychiatry	Arranged, Jan. 6-June 16, 1948	400.00 [18] 12.50 [25]
	Child Psychiatry	1 semester, February 1948	20.00
	Clinical Psychology and Psychotherapy	Arranged, Jan. 6-June 16, 1948	400.00 [18] 12.50 [25]
		2 hours a week, Jan. 6-June 16, 1948	400.00 [18] 12.50 [25]
	Introduction to Psychiatry	Arranged, Jan. 6-June 16, 1948	400.00 [18] 12.50 [25]
	Mental Hygiene	Arranged, Fridays, Jan. 6-June 16, 1948	400.00 [18] 12.50 [25]
	Psychological Diagnosis	Arranged, Jan. 6-June 16, 1948	400.00 [18] 12.50 [25]
	Psychology of Individual Differences	Arranged, Jan. 6-June 16, 1948	400.00 [18] 12.50 [25]
	Psychopathology	Arranged, Fridays, Jan. 6-June 16, 1948	400.00 [18] 12.50 [25]
	Special Types of Personality Diagnosis and Treatment	Arranged, Jan. 6-June 16, 1948	400.00 [18] 12.50 [25]
At: St. Elizabeth's Hospital	Individual Psychotherapy	Arranged, 2 hours a week, Jan. 6-June 16, 1948	400.00 [18] 12.50 [25]
	Group Psychotherapy	Arranged, 2 hours a week, Jan. 6-June 16, 1948	400.00 [18] 12.50 [25]
	Neurology and Neuropathology and Neuroroentgenology	Arranged, 2 hours a week, Jan. 6-June 16, 1948	400.00 [18] 12.50 [25]
	Psychiatric Conferences	Arranged, 2 hours a week, Jan. 6-June 16, 1948	400.00 [18] 12.50 [25]
	Psychosomatic Medicine	Arranged, Jan. 6-June 16, 1948	400.00 [18] 12.50 [25]
	Seminar in Psychotherapy for Physicians	Arranged, Saturdays, part time, Jan. 6-June 16, 1948	400.00 [18] 12.50 [25]
George Washington University School of Medicine, 1335 H St. N.W., Washington 5, D. C.	Neurology	1 week, full time, March 1-5, 1948	50.00
	Psychiatry	2 weeks, full time, Feb. 16-27, 1948	100.00
	Psychiatry and Neurology	3 weeks, full time, Feb. 16-March 5, 1948	150.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Clinical Neurology	10 days, part time, April 14, 1948	80.00
The Topeka Institute for Psychoanalysis, 3617 W. 6th Ave., Topeka, Kan. At: The Menninger Clinic	Continuous Case Seminar [10,26]	Evenings, throughout year	Not given
	Narcissistic Neuroses [10,26]	3 seminars, evenings, March 21, 1948	Not given
	Mechanisms of the Neuroses—Clinical Conferences [10,26]	12 seminars, evenings, Jan. 1-July 15, 1948	Not given
	Psychoanalytic Literature [26]	Alternate Tuesday evenings, throughout year	Not given
	Relationship of Psychoanalysis to Sociology [26]	6 seminars, Monday evenings, during 2nd quarter	Not given
	Scientific Methodology of Psychoanalysis [10,26]	4 lectures, Monday evenings, during 2nd quarter	Not given
U. S. Public Health Service Hospital, Lexington, Ky., Kentucky State Department of Health and Kentucky Psychiatric Association	Psychiatry in General Practice	4 days, Feb. 3-6, 1948	None
Commonwealth of Massachusetts, Department of Mental Health, Waltham At: Boston Psychopathic Hospital At: Metropolitan State Hospital, Waltham	Social and Special Psychiatry	36 lectures, Wednesday evenings, March 17-May 12, 1948	Not given
	Review Course in Basic Neurology and Psychiatry	81 lectures, Friday afternoons and evenings, Jan. 2-April 23, 1948	Not given
At: Walter E. Fernald State School, Waverly	Pediatric Neuropsychiatry (Child Psychiatry)	20 lectures, alternate Monday evenings, March 15-May 10, 1948	Not given
University of Minnesota Medical School, Department of Postgraduate Education, Minneapolis 14 At: Center for Continuation Study	Neurology	2 weeks, full time, Feb. 16-28, 1948	25.00 [12]
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16 At: Jewish Sanitarium and Hospital for Chronic Diseases At: Jewish Hospital	Neurology: Basis of Neural Function	8 weeks, part time, beginning April 1948	20.00
	Clinical Neurology	8 weeks, part time, beginning April 1948	20.00
	Child Psychiatry	10 weeks, part time, beginning April 1948	20.00
American Institute for Psychoanalysis, 266 West End Ave., New York 23	The Analytic Process [27]	15 weekly sessions, Feb. 6, 1948	30.00
	Interpretation of Dreams [27]	15 weekly seminars, Feb. 5, 1948	30.00
	Literary Figures in the Light of Modern Psychoanalysis	15 weekly lectures, Feb. 9, 1948	15.00
	Psychiatry and Psychoanalysis	15 weekly sessions, Feb. 6, 1948	30.00
	Seminar on Personal Case Histories	15 weekly seminars, Feb. 12, 1948	25.00
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32	Advanced Neurology (Neurology PM-1)	13 weeks, full time, Jan. 5-April 2, 1948	150.00
	Advanced Neurology (Neurology PM-1)	13 weeks, full time, April 5-July 2, 1948	150.00
At: Mount Sinai Hospital	Recent Advances in Neurology and Psychiatry (Neurology PM-30)	4 days, full time, April 5-9, 1948	60.00
	Psychiatry in General Medicine (Psychiatry PM-30)	4 months, part time, Jan. 6-May 18, 1948	100.00

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Postgraduate Courses for Practicing Physicians—January 1 to July 15, 1948—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
NEUROLOGY AND PSYCHIATRY—Continued			
New School for Social Research, 66 W. 12th St., New York	Seminar on Personal Case Histories	15 sessions, February 1948	25.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Child Psychiatry	10 sessions, Friday evenings, not given	30.00
	Introduction to Psychoanalysis	10 sessions, Monday evenings, not given	30.00
	Readings in Psychoanalytic Literature	15 sessions, alternate Tuesday evenings	40.00
	Psychiatric Treatment in Medical Practice	10 lectures, Thursday evenings, Feb. 11,	30.00
	Psychoanalysis and Psychiatry	15 sessions, Wednesday evenings, Feb. 10, 1948	40.00
	Seminar on Psychosomatic Medicine	10 sessions, Friday evenings, Feb. 12, 1948	40.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	Neurological and Psychiatric Diagnosis and Treatment in General Practice	2 weeks, full time, May 17-28, 1948	100.00
University of Oregon Medical School, 3181 S. W. Marquam Hill Road, Portland 1	Neurology	5 days, full time, March 8-12, 1948	50.00
NUTRITION			
College of Medical Evangelists, Graduate School of Medicine, Boyle and Michigan Ave., Los Angeles 33	Nutrition	4 weeks, part time, April 14, 1948	25.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Nutrition	1 month, arranged	150.00
OBSTETRICS AND GYNECOLOGY			
University Extension, University of California Medical School, Los Angeles 24 At: Wadsworth General Hospital, V. A. Center, Los Angeles	Obstetrics	5 days, Feb. 16-20, 1948	50.00
Yale University School of Medicine, 333 Cedar St., New Haven 11, Conn.	Obstetrical and Gynecological Clinic	Tuesdays, not given	Not given
	Residency Training Program	3 months or longer, throughout the year	500.00 [48]
George Washington University School of Medicine, 1335 H St. N.W., Washington 5, D. C.	Gynecology	1 week, full time, March 8-12, 1948	50.00
	Obstetrics and Gynecology	3 weeks, full time, March 8-26, 1948	150.00
	Obstetrics	1 week, full time, March 15-19, 1948	50.00
	Newborn and Premature	1 week, full time, March 22-26, 1948	50.00
Chicago Maternity Center, 1336 S. Newberry, Chicago 8	Postgraduate Training in Obstetrics and Gynecology	4 months, not given	None
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Obstetrics	2 weeks, full time, March 15, 1948	150.00
	Obstetrics	2 weeks, full time, April 12, 1948	150.00
	Obstetrics	2 weeks, full time, June 21, 1948	150.00
	Operative and Office Gynecology	2 weeks, full time, Feb. 23, 1948	150.00
	Operative and Office Gynecology	2 weeks, full time, March 29, 1948	150.00
	Operative and Office Gynecology	2 weeks, full time, April 26, 1948	150.00
	Operative and Office Gynecology	2 weeks, full time, June 7, 1948	150.00
State University of Iowa School of Medicine, University Campus, Iowa City	Obstetrics and Gynecology	3-4 days, full time, March 29-April 1, 1948	None
Iowa State Medical Society, 505 Bankers Trust Bldg., Des Moines At: Sioux City	Obstetrics and Pediatric Institute	1 day, Spring 1948	None
University of Louisville School of Medicine, 101 W. Chestnut St., Louisville	Postgraduate Refresher Course in Obstetrics and Gynecology	3 days, June 1948	25.00
Louisiana State Department of Health, and Tulane University School of Medicine, New Orleans At: Tulane University School of Medicine	Refresher Course in Obstetrics for Practicing Physicians	2 weeks, early June 1948 [9]	25.00 [12,32]
Tulane University of Louisiana Division of Graduate Medicine, 1430 Tulane Ave., New Orleans 13	Review in Gynecology	1 week, full time, Jan. 5-10, 1948	25.00 [12]
	Review in Obstetrics	1 week, full time, Jan. 12-17, 1948	25.00 [12]
University of Maryland School of Medicine, Lombard and Greene Sts., Baltimore 1	Gynecology and Obstetrics "A"	12 weeks, 18 hours of each subject per week	150.00
	Gynecology, Oncology and Female Urology "B"	Arranged, 10 weeks, full time	125.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15	Gynecology	1 month, full time, July 1948	125.00
At: Boston Lying-in Hospital	Clinical Obstetrics	1 month, full time, March 1948	125.00
	Clinical Obstetrics	1 month, full time, April 1948	125.00
	Clinical Obstetrics	1 month, full time, May 1948	125.00
At: Free Hospital for Women	Gynecology	1 month, full time, June 1948	125.00
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16	Manikin	12 weeks, part time, beginning April 1948	20.00
At: Long Island College of Medicine			
At: Long Island College Hospital	Prenatal Care	8 weeks, part time, beginning April 1948	20.00
At: Cumberland Hospital	Complications of Pregnancy	4 weeks, part time, beginning April 1948	20.00
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32	Obstetrics (PM-80)	3 months, full time, Jan. 1, 1948	350.00
	Obstetrics (PM-80)	3 months, full time, April 1, 1948	350.00
	Obstetrics (PM-80)	3 months, full time, July 1, 1948	350.00
	Obstetrics (PM-81)	1 month, full time, 1st of each month	100.00
At: Margaret Hague Maternity Hospital, Jersey City 4, N. J.	Obstetrics (PM-80) Internship Training	3 months, full time, 1st of each month	350.00
	Obstetrics (PM-81) Observation Course	1 month, full time, 1st of each month	100.00
At: Mount Sinai Hospital	Gynecology (PM-30), Recent Advances in Gynecology	5 days, April 12-17, 1948	65.00
New York Polyclinic School and Hospital, 345 W. 50th St., New York 19	Clinical and Operative (Cadaver) Gynecology	6 weeks, part time, arranged	175.00
	Obstetrics and Gynecology, Including Operative Gynecology (Cadaver) and Operative Obstetrics (Manikin)	2 months, full time, April 1948	250.00

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Postgraduate Courses for Practicing Physicians—January 1 to July 15, 1948—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	OBSTETRICS AND GYNECOLOGY—Continued		
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	Diagnosis and Office Treatment in Gynecology	15 sessions, part time, Jan. 5-Feb. 6, 1948	75.00
	Diagnosis and Office Treatment in Gynecology	15 sessions, part time, Feb. 16-March 22, 1948	75.00
	Diagnosis and Office Treatment in Gynecology	15 sessions, part time, April 5-May 7, 1948	75.00
	Diagnosis and Office Treatment in Gynecology	15 sessions, part time, May 17-June 21, 1948	75.00
	Gynecological Pathology [10]	16 sessions, part time, Jan. 6-Feb. 26, 1948	100.00
	Seminar in Gynecology	2 months, full time, Jan. 5-Feb. 28, 1948	300.00
	Seminar in Gynecology	2 months, full time, March 1-April 30, 1948	300.00
	Seminar in Gynecology	2 months, full time, May 3-June 30, 1948	300.00
	Vaginal Cytology [10]	16 sessions, part time, Jan. 6-Feb. 27, 1948	100.00
	Vaginal Cytology [10]	16 sessions, part time, March 2-April 30, 1948	100.00
	Vaginal Cytology [10]	16 sessions, part time, May 4-June 25, 1948	100.00
New York University College of Medicine, 477 First Ave., New York 16 At: Bellevue Hospital	Obstetrics and Gynecology (B-7)	3 months, full time, January 1948	250.00
	Obstetrics and Gynecology (B-7)	6 months, full time, January 1948	350.00
At: Lenox Hill Hospital	Basic Sciences, Histopathology for Gynecologists (C-7)	5 weeks, part time, Jan. 6, 1948	50.00
	Basic Sciences, Histopathology for Gynecologists (C-7)	5 weeks, part time, April 27, 1948	50.00
Oklahoma State Medical Association, 210 Plaza Court Bldg., Oklahoma City and Oklahoma State Health Department At: Principal cities and towns in Oklahoma	Gynecology	10 weeks, 1 lecture a week, not given	15.00
University of Oklahoma School of Medicine and University Hospitals, 800 Northeast 13th St., Oklahoma City 4	Postgraduate Course in Obstetrics	5 days, June 1948	Not given
University of Oregon Medical School, 3181 S. W. Marquam Hill Road, Portland 1	Gynecology	5 days, April 5-9, 1948	50.00
	Obstetrics	5 days, full time, Jan. 19-23, 1948	50.00
South Carolina State Board of Health, Columbia At: Any approved hospital for specialists, Division of Maternal and Child Health	Obstetrics and Pediatrics [10]	3 months or less, arranged	Varies
Dallas Southern Clinical Society, Medical Arts Bldg., Dallas, Texas	Obstetrics and Gynecology	3 days, full time, Feb. 4-6, 1948	25.00
University of Texas Medical Branch, 912 Avenue B, Galveston	Obstetrics	4 days, March 8-12, 1948	25.00
Baylor University College of Medicine, 509 Lincoln Ave., Houston, Texas	Gynecological and Obstetrical Pathology	10 weeks, part time, March 15-May 31, 1948	25.00
University of Wisconsin Medical School, 418 N. Randall Ave., Madison 6	Observation Course in Obstetrics and Gynecology for Specialists [10]	Arranged	100.00 [11]
	OPHTHALMOLOGY		
Research Study Club, 727 W. 7th St., Los Angeles 14 At: Elk's Club	Clinical Ophthalmology and Otolaryngology Postgraduate Course	1 week, Jan. 19-24, 1948	75.00
	Special Course in Eye Surgery	3 days, Jan. 23-25, 1948	50.00
	Cadaver Course in Ophthalmology and Otolaryngology	5 days, Jan. 30-Feb. 3, 1948	75.00
George Washington University School of Medicine, 1335 H St. N.W., Washington 5, D. C.	Ocular Surgery, Pathology and Orthoptics	1 week, full time, Jan. 19-24, 1948	200.00
	Ophthalmology	2 weeks, full time, Jan. 19-30, 1948	250.00
	Ophthalmology	1 week, full time, Jan. 26-30, 1948	50.00
The Children's Memorial Hospital, 707 Fullerton Ave., Chicago 14	Postgraduate Conference in Neuromuscular Anomalies of the Eyes [10,28]	6 days, June 13-18, 1948	50.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Advanced Refraction Methods [10]	6 weeks, full time, to be announced	Arranged
	Ophthalmology [10]	2 weeks, full time, April 5, 1948	200.00
University of Kansas School of Medicine, 39th St. and Rainbow Blvd., Kansas City 3 and Kansas Medical Society and State Board of Health	Ophthalmology and Otolaryngology	5 days, May 3-7, 1948	30.00
Tulane University of Louisiana Division of Graduate Medicine, 1430 Tulane Ave., New Orleans 13	Basic Training in Ophthalmology	10 months, full time, July 1, 1948-April 30, 1949	500.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15	Clinical Ophthalmology	4 weeks, full time, Jan. 31, 1948	125.00
Tufts Medical School, Postgraduate Division, 30 Bennet St., Boston 11	Ophthalmoscopy	4 weeks, mornings, Spring 1948	50.00
University of Michigan Medical School, Department of Postgraduate Medicine, 1313 E. Ann St., Ann Arbor	Ophthalmology and Otolaryngology	6 days, full time, May 3-8, 1948	50.00 [30]
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Montefiore Hospital	Ophthalmology (PM-60) Elementary Ophthalmoscopy	2 months, part time, Jan. 5-March 1, 1948	30.00
	Ophthalmology (PM-61) Perimetry	2 months, part time, March 15-May 10, 1948	30.00
At: Mount Sinai Hospital	Ophthalmology (PM-43) Symposium in Ophthalmology [10]	4 weeks, full time, April 26-May 22, 1948	200.00
	Ophthalmology (PM-61) Perimetry	9 weeks, part time, March 15-May 10, 1948	30.00
National Society for the Prevention of Blindness, 1790 Broadway, New York 19 At: Hotel Radisson, Minneapolis	Three Day Conference	3 days, April 5-7, 1948	None
New York Polyclinic School and Hospital, 345 W. 50th St., New York 19	Ophthalmology, Clinical and (Cadaver) Operations, with Refraction	3 months, part time, arranged	275.00
	Clinical Ophthalmology and Otolaryngology	6 weeks, full time, arranged	100.00
	Clinical Ophthalmology and Otolaryngology	3 months, full time, arranged	150.00
	Eye, Ear, Nose and Throat, Including Cadaver Courses and Refraction	3 months, full time, April 1948	600.00
	Eye, Ear, Nose and Throat Including Cadaver Courses and Refraction	3 months, full time, January 1948	600.00

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Postgraduate Courses for Practicing Physicians—January 1 to July 15, 1948—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	OPHTHALMOLOGY—Continued		
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	Motor Anomalies of the Eye (Part I)[10]	6 days, full time, March 8-13, 1948	100.00
	Motor Anomalies of the Eye (Part II)[10]	5 days, full time, March 15-19, 1948	75.00
	Ophthalmic Neurology [10]	5 days, part time, March 1-5, 1948	50.00
	Surgery of the Eye [10]	6 days, full time, March 22-27, 1948	100.00
	Differential Diagnosis with the Slit Lamp [10]	5 days, part time, March 1-5, 1948	50.00
	External Diseases of the Eye [10]	1 month, part time, every month	50.00
	Extra Ocular Muscles [10]	1 month, part time, every month	50.00
	Glaucoma [10]	8 weeks, part time, arranged	50.00
	Histopathology of the Eye [10]	3 months, part time, January-March, 1948	100.00
	Operative Eye Surgery [10]	1 month, part time, January-March, 1948 [39]	100.00
New York University College of Medicine, 477 First Ave., New York 16 At: New York Eye and Ear Infirmary	Ophthalmoscopy [10]	1 month, part time, every other month	50.00
	Intensive Course in Ophthalmoscopy [10]	10 days, full time, April or May, 1948	100.00
	Perimetry [10]	1 month, part time, every other month	50.00
	Physiological Optics [10]	6 weeks, part time, arranged	100.00
	Plastic Eye Surgery [10]	1 month, part time, February 1948	50.00
	Plastic Eye Surgery [10]	1 month, part time, April 1948	100.00
	Refraction [10]	2 months, part time, January 1948	100.00
	Refraction [10]	2 months, part time, April 1948	100.00
	Slit Lamp Microscopy [10]	1 month, part time, every month	50.00
Oregon Academy of Ophthalmology and Otolaryngology, 1735 N. Wheeler Ave., Portland and University of Oregon Medical School At: University of Oregon	Postgraduate Course in Ophthalmology and Otolaryngology [10]	1 week, full time, March 21-26, 1948	50.00
Gill Memorial Eye, Ear and Throat Hospital, 711 S. Jefferson St., Roanoke, Va.	Annual Spring Graduate Course [10]	1 week, April 5-10, 1948	75.00
	ORTHOPEDIC SURGERY		
College of Medical Evangelists, Graduate School of Medicine, Boyle and Michigan Ave., Los Angeles 33	General Orthopedic Surgery	6 weeks, full time, Feb. 2, 1948	150.00
	Minor Orthopedic Surgery	8 weeks, Thursday evenings, March 18, 1948	30.00
University Medical Extension, University of California, San Francisco 22	Orthopedic Surgery	5 days, full time, Feb. 9-13, 1948	Not fixed
Tulane University of Louisiana Division of Graduate Medicine, 1430 Tulane Ave., New Orleans 13	Basic Science as Applied to Orthopedics	5 months, full time, Feb. 2-June 1948	300.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	Seminar in Orthopedic Surgery [10]	10 days, full time, Jan. 5-16, 1948	125.00
	Orthopedics in General Practice	June 14-19, 1948	60.00
University of Oregon Medical School, 3181 S. W. Marquam Hill Road, Portland 1	Orthopedic Surgery	5 days, full time, May 10-14, 1948	50.00
	OTOLARYNGOLOGY		
Research Study Club, 727 W. Seventh St., Los Angeles 14 At: Elk's Club	Clinical Ophthalmology and Otolaryngology Postgraduate Course (17th Annual Mid-Winter Postgraduate Clinical Convention)	1 week, Jan. 19-24, 1948	75.00
	Cadaver Course in Ophthalmology and Otolaryngology (17th Annual Mid-Winter Postgraduate Clinical Convention)	5 days, Jan. 30-Feb. 3, 1948	75.00
Graduate Division of the School of Medicine, University of Southern California, Los Angeles 7 At: Los Angeles County Hospital	Otolaryngology (Course 751)	12 weeks, full time, Feb. 3, 1948	250.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Clinical Otolaryngology	2 weeks, full time, every 2 weeks	50.00
	Otolaryngology [10]	2 weeks, full time, April 19, 1948	200.00
University of Illinois College of Medicine, 1853 W. Polk St., Chicago	Basic and Clinical Refresher Course [10]	1 week, full time, April 5-10, 1948	75.00
University of Kansas School of Medicine, 39th and Rainbow Blvd., Kansas City 3 and State Board of Health and Kansas Medical Society At: University of Kansas Medical Center	Refresher Course in Ophthalmology and Otolaryngology	5 days, full time, May 3-7, 1948	30.00
Tulane University of Louisiana Division of Graduate Medicine, 1430 Tulane Ave., New Orleans 13	Basic Training in Otolaryngology	10 months, full time, July 1, 1948-April 30, 1949	500.00
University of Michigan Medical School, 1313 E. Ann St., Ann Arbor	Ophthalmology and Otolaryngology	6 days, full time, May 3-8, 1948	50.00 [10]
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32	Otolaryngology (PM-1) Bronchoscopy [10]	3 weeks, part time, April 19-May 7, 1948	250.00
	Otolaryngology (PM-10) Advanced Otolaryngology	3 months, full time, any 3 consecutive months through May 1948	150.00
Manhattan General Hospital, 307 Second Ave., New York 3	Laryngology and Inhalation	Friday afternoons, Saturday mornings, not given	50.00
New York Polyclinic School and Hospital, 345 W. 50th St., New York 19	Clinical Ophthalmology and Otolaryngology	6 weeks, full time, arranged	100.00
	Clinical Ophthalmology and Otolaryngology	3 months, full time, arranged	150.00
	Otolaryngology, Clinical	6 weeks, part time, arranged	75.00
	Otolaryngology, Clinical	3 months, part time, arranged	100.00
	Eye, Ear, Nose and Throat, including Cadaver Courses and Refraction	3 months, full time, January 1948	600.00
	Eye, Ear, Nose and Throat, including Cadaver Courses and Refraction	3 months, full time, April 1948	600.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	Symposium on Otolaryngology [10]	10 days, full time, April 26-May 7, 1948	150.00
	Diagnostic Procedures in Otolaryngology	12 sessions, arranged	40.00

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Postgraduate Courses for Practicing Physicians—January 1 to July 15, 1948—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
OTOLARYNGOLOGY—Continued			
University of Oregon Medical School, 3181 S. W. Marquam Hill Road, Portland 1 and Oregon Academy of Ophthalmology and Otolaryngology, Portland	Oregon Academy of Ophthalmology and Otolaryngology	1 week, full time, March 21-26, 1948	50.00
Gill Memorial Eye, Ear and Throat Hospital, 711 S. Jefferson St., Roanoke, Va.	Annual Spring Graduate Course	1 week, April 5-10, 1948	75.00
OTOLOGY			
Northwestern University Medical School, 303 E. Chicago Ave., Chicago	Audiology and End-aural Otologic Surgery	3 months, full time, January 1948	500.00
	Audiology and End-aural Otologic Surgery	4 weeks, full time, April 1948	500.00
New York Polyclinic School and Hospital, 345 W. 50th St., New York 19	Advanced Otology [10]	Arranged, part time	250.00
New York University College of Medicine, 477 First Ave., New York 16 At: New York Eye and Ear Infirmary	Clinical Otology [10]	4 weeks, part time, arranged	75.00
	Operative Surgery of the Ear and Surgery of the Nasal Sinuses [10]	1 month, part time, arranged	200.00
OTORHINOLARYNGOLOGY			
Georgetown University School of Medicine, 3900 Reservoir Road, N. W., Washington, D. C.	Intensive Graduate Course—Otorhinolaryngology Bronchoscopy	2 weeks, May 24, 1948	150.00
Manhattan General Hospital, 307 Second Ave., New York 3	Rhinoplasty and Otoplasty [50]	3 months, part time	Not given
PATHOLOGY			
University Extension, University of California Medical School, Los Angeles 24 At: Wadsworth General Hospital, V. A. Center, Los Angeles	Pathology	6 weeks, March 10-April 14, 1948	75.00
Yale University School of Medicine, 333 Cedar St., New Haven 11, Conn.	Clinical Medicine-Pathology Conference	Fridays, not given	None
	Training in Surgical Pathology	Arranged	Varies
At: Grace-New Haven Community Hospital	Residency Training Program	3 months or longer, throughout the year	500.00 [48]
At: Meriden Hospital	Residency Training Program	3 months or longer, throughout the year	500.00 [48]
At: New Britain General Hospital	Residency Training Program	3 months or longer, throughout the year	500.00 [48]
At: Norwalk General Hospital	Residency Training Program	3 months or longer, throughout the year	500.00 [48]
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Gross Pathology	12 months, full time, by appointment	500.00
	Gross and Microscopic Pathology	Hourly basis, by appointment	Hourly basis
	Four Weeks Surgical Pathology	4 weeks, full time, every month	250.00
	Surgical Pathology	2 weeks, full time, every 2 weeks	150.00
	Pathology "A"	1-3 years, arranged	300.00
University of Maryland School of Medicine, Lombard and Greene Sts., Baltimore 1	Pathology "B"	6 months, full time, arranged	150.00
	Neuropathology—Pathology "C" [10]	6 months, full time, arranged	200.00 [31]
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15 At: Free Hospital for Women	Pathology of Obstetrics and Gynecology	Equivalent of 1 month, Thursdays, Jan. 8-May 27, 1948	150.00
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16 At: Israel Zion Hospital	Gynecological Pathology [10]	10 weeks, part time, beginning April 1948	50.00
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Mount Sinai Hospital	Pathology (PM-31) Surgical Pathology	3 months, part time, Jan. 24-May 1, 1948	100.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 105th St., New York 29	Clinical Pathology	26 hours, arranged	100.00
	Pathology	16 weeks, part time, arranged	200.00
	Gynecological Pathology [10]	16 sessions, Jan. 6-Feb. 26, 1948	100.00
	Surgical Pathology [10]	30 sessions, March 2-June 10, 1948	200.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	Pathology of the Blood and Blood-Forming Organs [10]	12 sessions, April 19-May 28, 1948	100.00
	Gross and Microscopic Pathology	18 sessions, April 19-May 28, 1948	100.00
New York University College of Medicine, 477 First Ave., New York 16	Basic Sciences, Pathology in Relation to Orthopedic Surgery (C-8)	12 weeks, part time, March 2, 1948	90.00
	Basic Sciences, Radiation Pathology (C-9)	12 weeks, part time, April 5, 1948	100.00
At: Lenox Hill Hospital	Basic Sciences, Pathology for Surgeons (C-6)	5 weeks, part time, Jan. 5, 1948	50.00
	Basic Sciences, Pathology for Surgeons (C-6)	5 weeks, part time, April 26, 1948	50.00
University of Texas Medical Branch, Post-Graduate Division, 912 Avenue B., Galveston	Surgical Pathology	Not given, arranged	25.00 [12]
	Tumor Conference	1 day, Jan. 24, 1948	5.00
	Tumor Conference	5½ days, April 28-May 1, 1948	20.00
PEDIATRICS			
University Medical Extension, University of California, San Francisco 22 At: University of California Medical Center	Pediatrics	5 days, full time, June 28-July 2, 1948	Not given
Yale University School of Medicine, 333 Cedar St., New Haven 11, Conn.	Pediatric Clinic	Mondays, not given	None
	Residency Training Program	3 months or longer, throughout the year	500.00 [48]
	Child Development (Developmental Research)	Arranged	Varies
	Internship in Normal and Abnormal Development	Arranged	Varies
George Washington University School of Medicine, 1335 H St. N.W., Washington 5, D. C.	Pediatrics	2 weeks, full time, March 15-26, 1948	100.00

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Postgraduate Courses for Practicing Physicians—January 1 to July 15, 1948—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	PEDIATRICS—Continued		
Emory University School of Medicine, 50 Armstrong St., Atlanta, Ga. At: Emory University and Grady Memorial Hospitals	Pediatrics	2 weeks-1 year, arranged	125.00 [15] 12.00 [12]
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Pediatrics	12 months, full time, arranged	750.00
	Clinical Pediatrics	2 weeks, full time, every 2 weeks	60.00
	Formal Course in Pediatrics	4 weeks, full time, April 5, 1948	150.00
Iowa State Medical Society, 505 Bankers Trust Bldg., Des Moines 9 At: Sioux City	Obstetrics and Pediatric Institute	1 day, part time, Spring 1948	None
University of Kansas School of Medicine, 39th and Rainbow Blvd., Kansas City 3 and State Board of Health and Kansas Medical Society At: University of Kansas Medical Center	Refresher Course in Pediatrics and Public Health	4 days, full time, April 12-15, 1948	25.00
University of Louisville, School of Medicine, 101 W. Chestnut St., Louisville, Ky.	Postgraduate Refresher Course in Pediatrics	Full time, June 1948	25.00
Louisiana State University School of Medicine, 1542 Tulane Ave., New Orleans and Louisiana State Board of Health At: Bastrop	Diseases of Children in General Practice	4 days, part time, Jan. 12-15, 1948	None
	Diseases of Children in General Practice	4 days, part time, March 1-4, 1948	None
At: Monroe	Diseases of Children in General Practice	4 days, part time, Jan. 12-15, 1948	None
	Diseases of Children in General Practice	4 days, part time, March 1-4, 1948	None
At: Ruston	Diseases of Children in General Practice	4 days, part time, Jan. 12-15, 1948	None
	Diseases of Children in General Practice	4 days, part time, March 1-4, 1948	None
At: Tallulah	Diseases of Children in General Practice	4 days, part time, Jan. 12-15, 1948	None
	Diseases of Children in General Practice	4 days, part time, March 1-4, 1948	None
Tulane University of Louisiana Division of Graduate Medicine, 1430 Tulane Ave., New Orleans 13	Review in Pediatrics [10]	5 days, full time, March 8-12, 1948	25.00
Louisiana State Department of Health, New Orleans 7 and Louisiana State University School of Medicine At: Louisiana State University School of Medicine	Refresher Course in Pediatrics for Practicing Physicians	2 weeks, early in April, 1948 (tentative)	25.00 [12,32]
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15 At: Children's Hospital	Pediatrics	4 months, full time, Feb. 1-May 31, 1948	450.00
Tufts College Medical School, Postgraduate Division, 30 Bennet St., Boston 11 At: Boston Floating Hospital and Children's Clinic of Boston Dispensary	Pediatrics	2 weeks, full time, March 8-20, 1948	75.00
	Pediatrics	2 weeks, full time, June 1-12, 1948	75.00
At: Pratt Diagnostic Hospital	Clinical Pediatrics	1 month, mornings, Jan. 5-31, 1948	60.00 [7] 5.00 [8]
	Clinical Pediatrics	1 month, mornings, Feb. 1-28, 1948	60.00 [7] 5.00 [8]
	Clinical Pediatrics	1 month, mornings, March 1-20, 1948	60.00 [7] 5.00 [8]
	Clinical Pediatrics	1 month, mornings, April 5-May 1, 1948	60.00 [7] 5.00 [8]
	Clinical Pediatrics	1 month, mornings, May 3-29, 1948	60.00 [7] 5.00 [8]
	Pediatrics	2 weeks, full time, March 8, 1949	75.00 [7] 5.00 [8]
	Pediatrics	2 weeks, full time, June 1, 1948	75.00 [7] 5.00 [8]
Michigan State Medical Society, Departments of Pediatrics and Postgraduate Medicine, University of Michigan and The Michigan Department of Health, Ann Arbor At: University Hospital	Postgraduate Pediatrics	2 weeks, every 2 weeks, beginning Feb. 2, 1948	None
University of Michigan Medical School, 1313 E. Ann St., Ann Arbor	Pediatrics	3 days, full time, April 14-16, 1948	20.00
University of Minnesota Medical School, Department of Postgraduate Education, Minneapolis 14 At: Center for Continuation Study	Pediatrics	3-5 days, March 1948	15.00 or 25.00
Joint Committee on Post-Graduate Education, The Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16 At: Beth El Hospital At: Kings County Hospital	Clinical Pediatrics	5 weeks, 10 sessions, beginning April 1948	20.00
	Heart Disease in Childhood	10 weeks, 10 sessions, beginning April 1948	20.00
University of Buffalo School of Medicine Postgraduate Department, 24 High St., Buffalo At: Buffalo Children's Hospital	Postgraduate Seminar in Pediatrics	2 weeks, April 5-17, 1948	75.00
	Postgraduate Seminar in Pediatrics	2 weeks, May or June 1948	75.00
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Mount Sinai Hospital	Pediatrics (PM-30) Clinical Pediatrics	2½ months, part time, Feb. 3-April 15, 1948	80.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Clinical Pediatrics	1 month, all year	150.00
	Clinical Pediatrics	3 months, all year	250.00
	Clinical Pediatrics	6 months, all year	450.00
	Clinical Pediatrics	9 months, all year	650.00
New York Polyclinic School and Hospital, 345 W. 50th St., New York 19	Pediatrics	4 weeks, part time	50.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	Clinical Pediatrics	4 weeks, full time, Jan. 5-31, 1948	150.00
	Clinical Pediatrics	4 weeks, full time, March 1-25, 1948	150.00
	Clinical Pediatrics	4 weeks, full time, May 3-28, 1948	150.00
	Practical Clinical Pediatrics	4 weeks, full time, Feb. 2-28, 1948	125.00
	Practical Clinical Pediatrics	4 weeks, full time, March 29-April 24, 1948	125.00
	Practical Clinical Pediatrics	4 weeks, full time, June 1-26, 1948	125.00
	Symposium on Recent Advances in Pediatrics	6 days, full time, Feb. 9-14, 1948	60.00
	Symposium on Recent Advances in Pediatrics	6 days, full time, April 12-17, 1948	60.00
	Symposium on Recent Advances in Pediatrics	6 days, full time, June 7-12, 1948	60.00
	Neurology and Psychiatry for Pediatricians [10]	2 weeks, full time, May 3-15, 1948	100.00 [10]

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Postgraduate Courses for Practicing Physicians—January 1 to July 15, 1948—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	PEDIATRICS—Continued		
New York State Health Department, Albany 7 At: University of Buffalo School of Medicine	Intensive Refresher Course in Pediatrics for General Practitioners Participating in Child Health Programs [10]	2 weeks, June 1948 [9]	75.00
New York University College of Medicine, 477 First Ave., New York 16 At: Lenox Hill Hospital	Pediatrics (A-15)	8 weeks, part time, Winter and Spring 1948	50.00
Infants' and Children's Sanitarium, Southern Pediatric Seminar, Saluda, N. C.	Southern Pediatric Seminar	2 weeks, full time, July 19-31, 1948	25.00
University of Oklahoma School of Medicine, and University Hospitals, 800 N. E. Thirteenth St., Oklahoma City 4	Postgraduate Course in Pediatrics	5 days, March 1948	Not given
University of Oregon Medical School, 3181 S. W. Marquam Hill Road, Portland 1	Pediatrics	5 days, full time, Feb. 23-27, 1948	50.00
South Carolina State Board of Health, Columbia At: Approved Hospitals with Specialists Division of Maternal and Child Health	Obstetrics and Pediatrics	3 months or less, arranged	Varies
University of Texas Medical Branch, Postgraduate Division, 912 Avenue B, Galveston At: Houston	Pediatrics	5 days, April 12-17, 1948	25.00
	Spring Conference in Pediatrics	1 week, April 12-17, 1948	25.00
University of Wisconsin Medical School, 418 N. Randall Ave., Madison 6	Observation Course in Practical Pediatrics	5 days, full time, Feb. 23-27, 1948	25.00
	PHARMACOLOGY		
New York University College of Medicine, 477 First Ave., New York 16	Basic Sciences, Pharmacology (C-11)	24 weeks, Thursday afternoons, Jan. 8, 1948	75.00
	PHYSICAL MEDICINE		
Graduate Division of the School of Medicine, University of Southern California, Los Angeles 7 At: Los Angeles County Hospital	Physical Medicine in the Treatment of Anterior Poliomyelitis	4 weeks, full time, March 1948	100.00
	Principles of Physical Medicine (Course 775)	12 weeks, full time, February 1948	250.00
	Principles of Physical Medicine (Course 775)	12 weeks, full time, May 1948	250.00
	Physical Medicine in the Treatment of Anterior Poliomyelitis	4 weeks, full time, June 1948	100.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Physical Medicine	10 weeks, part time, April 21, 1948	125.00
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32	Physical Therapy (PM-100) Physical Medicine	3½ months, full time, Jan. 5-April 25, 1948	250.00
New York Polyclinic School and Hospital, 345 W. 50th St., New York 19	Physical Medicine	4 weeks, full time, arranged	100.00
New York University College of Medicine, 477 First Ave., New York 16 At: Bellevue Hospital	Rehabilitation and Physical Medicine (B-14) [35]	12 weeks, full time, January 1948	200.00
	Rehabilitation and Physical Medicine (B-14) [35]	24 weeks, full time, January 1948	400.00
University of Texas Medical Branch, Postgraduate Division, 912 Avenue B, Galveston	Physical Medicine	5 days, March 1-5, 1948	25.00
University of Wisconsin Medical School, 418 N. Randall Ave., Madison 6	Observation Course in Principles of Physical Medicine	5 days, full time, Jan. 26-30, 1948	25.00
	PHYSIOLOGY		
Yale University School of Medicine, 333 Cedar St., New Haven 11, Conn.	Neurophysiology	3 months or longer, throughout the year	500.00 [48]
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Mount Sinai Hospital	Physiology (PM-31) Physiology of Water and Electrolyte Balance	22 days, March 29-April 20, 1948	40.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Physiology of the Cardio-Vascular System and Blood	1 month, arranged	75.00
	Physiology of the Endocrine System	1 month, arranged	75.00
	Physiology of Respiration	1 month, arranged	75.00
	Physiology of the Nervous System	2 weeks, arranged	50.00
	Physiology of the Special Senses	1 month, arranged	75.00
	Physiology and Chemistry of the Gastrointestinal Tract and Digestion	1 month, arranged	150.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	Normal and Pathological Physiology: Functional and Chemical Aspects	10 days, full time, March 1-12, 1948	100.00
	Normal and Pathological Physiology: Functional and Chemical Aspects	8 sessions, Jan. 7-Feb. 25, 1948	30.00
University of South Dakota Medical School, Vermillion	Clinical Application of Physiology	3 months, part time, may start any time	None
Southwestern Medical College of Southwestern Medical Foundation, 2211 Oak Lawn, Dallas, Texas	Pathological Physiology	21 weeks, part time, Jan. 9-May 28, 1948	None
	POLIOMYELITIS		
Graduate Division of the School of Medicine, University of Southern California, Los Angeles 7 At: Los Angeles County Hospital	Physical Medicine in the Treatment of Anterior Poliomyelitis (Course 776)	4 weeks, full time, March 1948	100.00
	Physical Medicine in the Treatment of Anterior Poliomyelitis (Course 776)	4 weeks, full time, June 1948	100.00
University of Colorado School of Medicine, 4200 E. Ninth Ave., Denver 7 and National Foundation for Infantile Paralysis At: University of Colorado Medical Center	Poliomyelitis Teaching Program	2 weeks, full time, Jan. 5-17, 1948	75.00 [9]
	Poliomyelitis Teaching Program	2 weeks, full time, May 31-June 12, 1948	75.00 [9]
D. T. Watson School of Physical Therapy, Leetsdale, Pa.	Recent Advances in Treatment of Poliomyelitis	4 days, arranged	None

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Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	PROCTOLOGY		
Tufts College Medical School, Postgraduate Division, 30 Bennet St., Boston 11 At: Pratt Diagnostic Hospital	Proctology I	6 days, full time, April 26, 1948	40.00 [7] 5.00 [8]
	Proctology II	4 weeks, full time, May 3, 1948	250.00 [7] 5.00 [8]
	Proctology III	1 month, mornings, Jan. 5, 1948	100.00 [7] 5.00 [8]
	Proctology III	1 month, mornings, Feb. 2, 1948	100.00 [7] 5.00 [8]
	Proctology III	1 month, mornings, March 1, 1948	100.00 [7] 5.00 [8]
	Proctology III	1 month, mornings, March 29, 1948	100.00 [7] 5.00 [8]
	Proctology III	1 month, mornings, June 1, 1948	100.00 [7] 5.00 [8]
Joint Committee on Post-Graduate Education Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16 At: Jewish Hospital	Proctology	6 weeks, part time, beginning April 1948	25.00
New York Polyclinic School and Hospital, 345 W. 50th St., New York 19	Proctology (Clinical)	6 weeks, part time, January 1948	75.00
	Proctology, Clinical and Cadaver Operations, and Gastroenterology	6 weeks, January 1948	200.00
	Proctology (Clinical)	6 weeks, part time, April 1948	75.00
	Proctology, Clinical and Cadaver Operations, and Gastroenterology	6 weeks, April 1948	200.00
New York University College of Medicine, 477 First Ave., New York 16 At: Bellevue Hospital and New York University College of Medicine	Proctology (B-9)	8 weeks, part time, January 1948	125.00
	Proctology (B-9)	8 weeks, part time, April 1948	125.00
	PUBLIC HEALTH		
Yale University School of Medicine, 333 Cedar St., New Haven 11, Conn.	Preventive Medicine and Public Health	20 sessions, once a week, Jan. 15-May 15, 1948	Not given
University of Kansas School of Medicine, 39th and Rainbow Blvd., Kansas City 3 and State Board of Health and Kansas Medical Society At: University of Kansas Medical Center	Refresher Course in Pediatrics and Public Health	4 days, full time, April 12-15, 1948	25.00
Harvard University School of Public Health, 55 Shattuck St., Boston 15	Public Health Bacteriology (1-C) Principles of Public Health Bacteriology and Immunology	2 months, part time, Feb. 2-March 27, 1948	33.50
	Public Health Practice (14-D) Venereal Disease Control	2 months, part time, April 5-May 29, 1948	47.75
University of Michigan School of Public Health, 109 S. Observatory St., Ann Arbor	Postgraduate and Continued Education in Public Health Practice and Epidemiology	1 semester, Feb. 9-June 4, 1948	100.00 [36] 175.00 [37]
	RADIOLOGY		
University Extension, University of California Medical School, Los Angeles 24	Theoretical and Clinical Aspects of the Radioactive Elements	1 week, June 14-18, 1948	50.00
Yale University School of Medicine, 333 Cedar St., New Haven 11, Conn. At: Grace-New Haven Community Hospital	Refresher Courses on Request (Radiology)	Arranged	Varies
	Neurosurgical Conference	Fridays, not given	None
	Chest Conference	Fridays, not given	None
	Residency Training Program	3 months or longer, throughout the year	500.00 [16]
At: Veterans Administration Hospital, Newington, Conn.	Residency Training Program	3 months or longer, throughout the year	None
American College of Radiology, 20 N. Wacker Drive, Chicago 6	Chicago Postgraduate Course [19]	1 week, March 8-12, 1948	50.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Clinical Roentgenology	2 weeks, full time, 3rd Monday of every month	70.00
	Diagnostic Roentgenology	2 weeks, full time, 1st Monday of every month	125.00
	Radiation Physics	3 days, part time, May or June 1948	50.00
	Radiation Therapy	1 month, full time, every month	200.00
	Radiation Therapy	2 weeks, full time, every 2 weeks	110.00
	Radiology	12 months, full time, arranged	750.00
	Radiology	8 months, full time, arranged	500.00
University of Kansas School of Medicine, 39th and Rainbow Blvd., Kansas City 3 and State Board of Health and Kansas Medical Society At: University of Kansas Medical Center	Refresher Course in Radiology and Cancer	3 days, full time, Jan. 19-21, 1948	None
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15 At: Massachusetts General Hospital At: Peter Bent Brigham Hospital	General Radiology	1 month, full time,[38] monthly, by arrangement	150.00
	General Radiology	1 month, full time,[38] monthly, by arrangement	150.00
At: Children's Hospital	Pediatric Roentgenology	1 month, full time,[38] monthly, by arrangement	150.00
Tufts College Medical School, Postgraduate Division, 30 Bennet St., Boston 11 At: Pratt Diagnostic Hospital	Radiology	3 days, full time, May 12, 1948	25.00 [7] 5.00 [9]
University of Michigan Medical School, Department of Postgraduate Medicine, 1313 E. Ann St., Ann Arbor	Diagnostic Roentgenology	5 days, full time, April 19-23, 1948	30.00
Joint Committee on Post-Graduate Education Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16 At: Jewish Hospital	Cardiovascular Roentgenology	8 weeks, part time, April 1948	20.00
At: Jewish Sanitarium and Hospital for Chronic Diseases	Clinical Radiology	8 weeks, part time, April 1948	20.00
At: Beth El Hospital	Roentgen Diagnosis	8 weeks, part time, April 1948	20.00
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32	Radiology (PM-1) Radiological Physics	2 months, part time, Feb. 25-April 23, 1948	25.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Diagnostic Roentgenology	6 weeks, half time, every 6 weeks except summer months	150.00
	Radium and Roentgen Therapy	6 weeks, half time, every 6 weeks except summer months	150.00

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Postgraduate Courses for Practicing Physicians—January 1 to July 15, 1948—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	RADIOLOGY—Continued		
New York Polyclinic School and Hospital, 345 W. 50th St., New York 19	Radiology	3 months, full time, January 1948	300.00
	Radiology	3 months, full time, April 1948	300.00
New York University College of Medicine, 477 First Ave., New York 16 At: Beth Israel Hospital	Diagnostic Radiology (B-13)	12 weeks, part time, Jan. 28, 1948	100.00
	Roentgenology (A-18)	8 weeks, part time, Winter and Spring, 1948	50.00
University of Oregon Medical School, 3181 S. W. Marquam Hill Road, Portland 1	Radiology	5 days, full time, April 26-30, 1948	50.00
American College of Radiology, 20 N. Wacker Drive, Chicago 6 At: Philadelphia	Philadelphia Postgraduate Course	1 week, Feb. 2-6, 1948	50.00
	SURGERY		
University Extension, University of California Medical School, Los Angeles 24 At: U. S. Naval Hospital, San Diego	General Surgery	3 days, March 2-4, 1948	50.00
At: Birmingham General Hospital, U. S. V. A., Van Nuys, Calif.	General Surgery	5 days, March 1-5, 1948	50.00
Graduate Division of the School of Medicine, University of Southern California, Los Angeles 7 At: Los Angeles County Hospital	Recent Surgical Advances (Course 756)	12 weeks, Wednesday evenings, May 1948	50.00
University Medical Extension, University of California, San Francisco 22 At: University of California Medical Center	Internal Medicine and General Surgery	5 days, full time, June 21-25, 1948	Not given
Yale University School of Medicine, 333 Cedar St., New Haven 11, Conn.	Grand Rounds (Surgery)	Mondays and Wednesdays, not given	None
	Surgical Clinic	Wednesdays, not given	None
	Tumor Conference	Tuesdays, not given	None
	Neurological Study Unit Conferences	Tuesdays, not given	None
	X-Ray and Pathological Conference	Mondays, not given	None
	Residency Training Program	3 months or longer, throughout the year	500.00 [48]
At: Veterans Administration Hospital, Newington, Conn.	Residency Training Program	3 months or longer, throughout the year	None
Yale University School of Medicine, Institute of Occupational Medicine and Hygiene, New Haven 11, Conn.	Second Postgraduate Course, Industrial Medicine and Surgery	10 weekly sessions (90 minutes each), Feb. 3-April 8, 1948	15.00
George Washington University School of Medicine, 1335 H St. N.W., **Washington 5, D. C.**	Surgery of the Extremities	1 week, full time, Feb. 2-6, 1948	50.00
	Surgery	6 weeks, full time, Feb. 2-March 12, 1948	300.00
	Abdominal Surgery	2 weeks, full time, Feb. 9-20, 1948	100.00
	Thoracic Surgery and Endoscopy	1 week, full time, March 1-5, 1948	50.00
	Fractures and Traumatic Surgery	2 weeks, full time, April 26, 1948	125.00
	Fractures and Traumatic Surgery	2 weeks, full time, June 7, 1948	125.00
	Practical Cystoscopy	10 days, part time, every 2 weeks	150.00
	Personal Course in Breast and Thyroid Surgery	1 week, full time, June 14, 1948	100.00
	Clinical Surgery	10 weeks, part time, Feb. 26, 1948	150.00
	Surgery of Colon and Rectum	1 week, full time, March 8, 1948	100.00
	Surgery of Colon and Rectum	1 week, full time, April 26, 1948	100.00
	Surgery of Colon and Rectum	1 week, full time, May 24, 1948	100.00
	Surgery of Colon and Rectum	1 week, full time, June 14, 1948	100.00
	Personal Course in Gallbladder Surgery	1 week, full time, April 12, 1948	100.00
	Personal Course in Gallbladder Surgery	1 week, full time, June 21, 1948	100.00
	Operative Surgery	2 weeks, full time, Jan. 19, 1948	200.00
	Operative Surgery	2 weeks, full time, Feb. 16, 1948	200.00
	Operative Surgery	2 weeks, full time, March 15, 1948	200.00
	Operative Surgery	2 weeks, full time, April 12, 1948	200.00
	Operative Surgery	2 weeks, full time, May 10, 1948	200.00
	Operative Surgery	2 weeks, full time, June 7, 1948	200.00
	Operative Surgery, Surgical Anatomy and Clinical Surgery	4 weeks, full time, Feb. 2, 1948	300.00
	Operative Surgery, Surgical Anatomy and Clinical Surgery	4 weeks, full time, March 1, 1948	300.00
	Operative Surgery, Surgical Anatomy and Clinical Surgery	4 weeks, full time, March 29, 1948	300.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Operative Surgery, Surgical Anatomy and Clinical Surgery	4 weeks, full time, April 26, 1948	300.00
	Operative Surgery, Surgical Anatomy and Clinical Surgery	4 weeks, full time, May 24, 1948	300.00
	Operative Surgery, Surgical Anatomy and Clinical Surgery	4 weeks, full time, June 21, 1948	300.00
	Vaginal Approach to Pelvic Surgery	1 week, full time, Feb. 16, 1948	100.00
	Vaginal Approach to Pelvic Surgery	1 week, full time, March 22, 1948	100.00
	Vaginal Approach to Pelvic Surgery	1 week, full time, April 19, 1948	100.00
	Vaginal Approach to Pelvic Surgery	1 week, full time, June 21, 1948	100.00
	Surgical Technique	10 weeks, part time, Feb. 18, 1948	200.00
	Personal Course in Thoracic Surgery	1 week, full time, June 7, 1948	125.00
	Surgical Anatomy and Clinical Surgery	2 weeks, full time, Feb. 16, 1948	150.00
	Surgical Anatomy and Clinical Surgery	2 weeks, full time, March 15, 1948	150.00
	Surgical Anatomy and Clinical Surgery	2 weeks, full time, April 12, 1948	150.00
	Surgical Anatomy and Clinical Surgery	2 weeks, full time, May 10, 1948	150.00
	Surgical Anatomy and Clinical Surgery	2 weeks, full time, June 7, 1948	150.00
	Surgical Anatomy and Clinical Surgery	2 weeks, full time, July 6, 1948	150.00

References will be found on page 1112.

Postgraduate Courses for Practicing Physicians—January 1 to July 15, 1948—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	SURGERY—Continued		
University of Kansas School of Medicine, 39th and Rainbow Blvd., Kansas City 3 and State Board of Health and Kansas Medical Society At: University of Kansas Medical Center	Refresher Course in Surgery	3 days, full time, March 15-17, 1948	20.00
University of Louisville School of Medicine, 101 W. Chestnut St., Louisville, Ky.	Postgraduate Refresher Course in Medicine and Surgery	5 days, June 1948	25.00
Tulane University of Louisiana Division of Graduate Medicine, 1430 Tulane Ave., New Orleans 12	Review of General Surgery	1 week, full time, March 15-20, 1948	25.00 [13]
Tufts College Medical School, Postgraduate Division, 30 Fennet St., Boston 11 At: Pratt Diagnostic Hospital	Minor Surgery	1 month, mornings, Jan. 5-31, 1948	60.00 [7] 5.00 [8]
	Minor Surgery	1 month, mornings, Feb. 2-28, 1948	60.00 [7] 5.00 [8]
	Minor Surgery	1 month, mornings, March 1-27, 1948	60.00 [7] 5.00 [8]
	Minor Surgery	1 month, mornings, April 5-May 1, 1948	60.00 [7] 5.00 [8]
	Minor Surgery	1 month, mornings, June 1-26, 1948	60.00 [7] 5.00 [8]
	Principles of Surgical Technique	7 weeks, part time, March 1-April 23, 1948	200.00 [7] 5.00 [8]
	Traumatic and Minor Surgery	4 weeks, full time, May 3, 1948	100.00 [7] 5.00 [8]
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32	Surgery (PM-100) Symposium on Surgery [10]	5 days, full time, May 17-21, 1948	50.00
At: Mount Sinai Hospital	Surgery (PM-30) Surgery of the Gastrointestinal Tract [10]	4 weeks, full time, Jan. 5-30, 1948	150.00
	Surgery (PM-30) Surgery of the Gastrointestinal Tract [10]	4 weeks, full time, April 19-May 14, 1948	150.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Surgical Technique	50 hours, arranged	375.00
New York Polyclinic School and Hospital, 345 W. 50th St., New York 19	Clinical Surgery	6 weeks, full time, January 1948	100.00
	Clinical Surgery	6 weeks, full time, April 1948	100.00
	Clinical and Operative (Cadaver) Surgery	6 weeks, full time, January 1948	200.00
	Clinical and Operative (Cadaver) Surgery	6 weeks, full time, April 1948	200.00
	Combined Surgical Course	3 months, full time, January 1948	350.00
	Combined Surgical Course	3 months, full time, April 1948	350.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	Surgical Anatomy as Applied to Operative Gynecology (Cadaver) [10]	12 sessions, Jan. 2-Feb. 14, 1948 [39]	200.00
	Diagnosis and Treatment of Trauma	6 days, full time, May 3-8, 1948	60.00
	Seminar in Traumatic Surgery [10]	2 weeks, full time, March 8-20, 1948	125.00
	Surgical Anatomy of the Extremities [10]	10 days, full time, May 17-28, 1948	250.00
	Basic Course in Traumatic Surgery [10]	6 weeks, full time, Jan. 12-Feb. 20, 1948	300.00
	Normal and Pathological Physiology in Surgery [10]	8 sessions, Jan. 7-Feb. 25, 1948	30.00
	Review of General Surgery for Surgeons	4 weeks, full time, March 29-April 23, 1948	200.00
	Practical Aspects of Gastrointestinal Surgery [10]	7 sessions, May 5-June 16, 1948	90.00
	Dissection and Surgical Anatomy [10]	12 sessions, arranged	150.00
	Surgical Anatomy as Applied to Colon and Rectal Surgery (Cadaver) [10]	6 sessions, arranged	100.00
	Surgical Anatomy as Applied to Thoracic Surgery (Cadaver) [10]	12 sessions, arranged	200.00
	Surgical Anatomy as Applied to General Surgery (Cadaver) [10]	12 sessions, Jan. 20-Feb. 14, 1948 [39]	200.00
	Surgical Anatomy as Applied to Operative Gynecology (Cadaver) [10]	12 sessions, Jan. 20-Feb. 14, 1948 [39]	200.00
	Surgical Pathology [10]	30 sessions, March 2-June 10, 1948 [39]	200.00
Medical Society of the State of New York, 423 Greenwood Place, Syracuse 10, and New York State Department of Health	Postgraduate Education and Training in Fields Related to Cancer Control (Fellowships) [18]	Arranged up to 3 months,	None [47]
University of Oregon Medical School, 3181 S. W. Marquam Hill Road, Portland 1	General Surgery	5 days, full time, March 15-19, 1948	50.00
University of Texas Medical Branch, Postgraduate Division, 912 Avenue B, Galveston	Surgery	5 days, Jan. 12-17, 1948	25.00
University of Vermont College of Medicine, Pearl St., College Park, Burlington	Surgery [17]	4 weeks, minimum, arranged	500.00 [18]
Washington State Medical Association, 218 Cobb Bldg., Seattle	Surgery	1 month, full time, March 1-31, 1948	Not given
University of Wisconsin Medical School, 418 N. Randall Ave., Madison 6	Observation Course in Surgery for Specialists [10]	Arranged	100.00 [11]
	THERAPY		
University of Michigan Medical School, Department of Postgraduate Medicine, 1313 E. Ann St., Ann Arbor	Recent Advances in Therapeutics	4 days, full time, June 1-4, 1948	25.00
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16 At: Long Island College of Medicine At: Jewish Sanitarium and Hospital for Chronic Diseases	Biologic Fundamentals of Radiation Therapy	10 weeks, part time, April 1948	20.00
	Clinical Therapeutics	6 weeks, part time, April 1948	20.00

References will be found on page 1112.

Postgraduate Courses for Practicing Physicians—January 1 to July 15, 1948—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	THERAPY—Continued		
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32	Medicine (PM-1) Physiologic Therapy in Respiratory Diseases	6 days, full time, Jan. 26-31, 1948	40.00
Council of Rochester Regional Hospitals, Inc., 800 Reynolds Arcade Bldg., Rochester 4, N. Y. At: Clifton Springs Sanitarium and Clinic, Clifton Springs, N. Y.	Postgraduate Course in Therapeutics	5 days, full time, to be announced	25.00 [40]
At: Genesee Hospital, Rochester, N. Y.	Postgraduate Course in Therapeutics	5 days, full time, to be announced	25.00 [40]
University of Texas Medical Branch, 912 Avenue B, Galveston	Electro-shock Therapy	Not given, arranged	25.00 [22]
	TROPICAL MEDICINE		
New York University College of Medicine, 477 First Ave., New York 16	Tropical Medicine (B-15)	10 weeks, full time, April 5, 1948	250.00
	UROLOGY		
College of Medical Evangelists, Graduate School of Medicine, Boyle and Michigan Ave., Los Angeles 33	General Urology	6 weeks, Wednesday evenings, Jan. 7, 1948	25.00
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16 At: Long Island College Hospital	Urology	1 month, part time, beginning 1st of each month	25.00 [11]
New York Hospital (James Buchanan Brady Foundation), 525 E. 68th St., New York	Postgraduate Course in Urology	6 months or longer,[51] arranged	500.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	Advanced Course in Urology for Specialists [10]	2 months, full time, Jan. 5-Feb. 28, 1948	300.00
New York University College of Medicine, 477 First Ave., New York 16 At: Beth Israel Hospital	Urology (A-19)	6 weeks, part time, Winter and Spring, 1948	100.00
	VENEREAL DISEASES		
United States Public Health Service, Hot Springs National Park, Ark., and Arkansas State Board of Health	Tenth Postgraduate Course in the Clinical Management and Public Health Control of the Venereal Diseases	3 weeks, full time, Spring 1948 (date pending)	None
University Extension, University of California Medical School, Los Angeles 24 At: State Building, Los Angeles	Recent Advances in the Diagnosis and Treatment of Syphilis, Gonorrhea, and the Minor Venereal Diseases	8 weeks, Feb. 26-April 22, 1948	None
Bureau of Social Hygiene, City of New York Department of Health, 125 Worth St., New York	Postgraduate Course in Diagnosis and Treatment of Venereal Diseases	2 mornings a week throughout year	None
At: Central Clinic	Practical Seminar in Diagnosis, Treatment and Control of Venereal Disease	15 sessions, Spring 1948	None

1. Usually 5, 3 hour periods weekly for six months, but may be arranged to suit individual.
2. Arranged according to content of course selected.
3. Later sessions by arrangement.
4. Physicians in practice are free to visit this course or do dissection on their own, one or two afternoons a week or in the evening if they desire.
5. This course is open to Public Health Officials and Directors of Rheumatic Fever Programs.
6. Suited to physicians resident near Philadelphia area in general.
7. Tuition.
8. Registration fee.
9. Tentative.
10. Specialists.
11. Per month.
12. Per week.
13. $100.00 for each additional month.
14. Fellows receive honorarium of $200.00 a month.
15. Per quarter.
16. Per year.
17. Primarily for graduates of University of Vermont College of Medicine and other medical school graduates planning to practice in Vermont. Course gives no credit for Board certification.
18. Pro-rated on $500.00 veterans allotment for training.
19. Trainee is paid $10.00 per day while on duty. It is required that at least 50 per cent of the trainee's time be taken up with the diagnosis and treatment of cancer and that he will be on duty full time as an integral member of the hospital staff.
20. To nonmembers; free to members.
21. Three months review in Boston, 9 months assistant resident in regional hospital.
22. Members.
23. Nonmembers.
24. A year (of 10 weeks).
25. Per semester hour of credit.
26. Restricted to physician candidates of Topeka Institute for Psychoanalysis.
27. Candidates in training only.
28. Not for veterans under the G. I. Bill.
29. Other months by arrangement.
30. For both courses; $25.00 for either division.
31. Plus $10.00 laboratory fee.
32. Paid by Health Department.
33. For 10 periods.
34. Per single period.
35. Part time courses of variable length may be given by arrangement.
36. Residents.
37. Nonresidents.
38. May be taken for several months.
39. Later session by arrangement.
40. Paid by Council to hospital conducting course; stipend of $50.00 paid to physician.
41. Per semester.
42. This program is conducted primarily for residents in affiliated hospitals on a seminar basis with specific assignments made by the department; it is open to any qualified individual by arrangement with chairman of department.
43. Fellowships in the amount of $100.00 will be offered.
44. Stipends of $250.00 per month.
45. Stipend paid to Fellows.
46. For 9 months.
47. Carry monthly stipend of $300, payment of travel expenses and tuition up to $100 per month.
48. Available to physicians of upstate New York area. Physicians make their own arrangements with training center they select.
49. For intern and resident.
50. Must be members of the American Board of Otolaryngology.
51. Without additional fee.

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Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1937 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted.

Delaware State Medical Journal, Wilmington

19:167-188 (Sept.) 1947

Cancer Program of State Board of Health. J. W. Spies.—p. 167.
Status of Stream Pollution Abatement Projects in Delaware Valley. R. C. Beckett.—p. 168.
Ambulatory Treatment of Syphilis with Penicillin in Oil and Wax. W. L. Porter.—p. 172.
Vital Points of Premarital Law. R. D. Herdman.—p. 173.
Through Food. M. T. Davenport.—p. 175.
Mobile X-Ray Unit Survey. L. D. Phillips.—p. 176.
Ten Thousand More Children from 1 to 6. C. A. Marshall.—p. 176.
Convalescent Care as Means of Rehabilitation. Eunice Usher.—p. 178.
Infant Mortality Problems. F. I. Hudson.—p. 180.
Physical Therapy in State Crippled Children's Service. Mary L. McCarthy.—p. 182.

Gastroenterology, Baltimore

9:119-236 (Aug.) 1947

Gastroenterology, Internal Medicine and General Practitioner. W. L. Palmer.—p. 119.
*Gastric Acidity in Normal Individuals and Those with Uncomplicated Duodenal Ulcer: An Attempt to Influence Nocturnal Secretion. W. L. Voegtlin.—p. 125.
*Ambulant Treatment of Peptic Ulcer Syndrome: Comparative Effectiveness and Constipating Action of Antacids. R. C. Batterman and I. Ehrenfeld.—p. 141.
Histological Study of Participation of Intestinal Epithelium, Reticulo-Endothelial System and Lymphatics in Iron Absorption and Transport: Preliminary Report. T. Gillman and A. C. Ivy.—p. 162.
Present Incidence of Intestinal Infestation with Endamoeba histolytica and other Protozoa in Chicago Area. R. E. Dolkart and R. N. Hedges.—p. 170.
Salmonella Infections at Cook County Hospital, Chicago, Illinois. F. F. Chesley and Carrie I. Woolsey.—p. 177.
Diarrhea in U. S. Army Personnel in Italy. S. G. Meyers and C. A. Payne.—p. 186.
Secretion of Gastric Mucin Following an Alcohol Meal: Studies on Normal Subjects and on Patients with Peptic Ulcer. M. Tulin and Jeanette Gutmann.—p. 191.

Gastric Acidity.—Voegtlin studied the nocturnal gastric acidity in 13 normal persons and in 53 patients with uncomplicated duodenal ulcer. The study was carried out by continuous intubation for twenty-four hours with the Levine tube, small samples being removed at intervals. The mean nocturnal free acidity found in a series of patients with uncomplicated duodenal ulcer does not vary significantly from that in a group of normal persons. In about 20 per cent of ulcer patients the values are higher than normal, while in an equal number they are lower. The injection of 1/100 grain (0.6 Mg.) atropine at 9 p. m. does not significantly decrease the nocturnal acidity. Administration of milk and alkali at two hour intervals during the night does not decrease the nocturnal acidity to a significant degree. When cottonseed oil or oleic acid are placed in the stomach they apparently inhibit the formation of gastric acid to a slight degree about four to six hours later. The effect is not sufficiently pronounced or prolonged to indicate the practical usefulness of this procedure in depressing nocturnal acidity. The use of insoluble antacids in the Sippy regimen instead of the conventional Sippy powder causes a slight and inconstant lowering of the gastric acidity about 1 a. m., which is attributed to absence of the rebound phenomenon. Gastric lavage with a solution of sodium bicarbonate at 9 p. m. does not decrease the nocturnal acidity. In patients with uncomplicated duodenal ulcer the nocturnal gastric acidity does not show a tendency to decrease as healing occurs. The continuous presence of the Levine tube in the stomach does not consistently either stimulate or depress gastric secretion of acid.

Ambulant Treatment of Peptic Ulcer.—Batterman and Ehrenfeld studied practically every available antacid. Whereas in the past it has been the custom to appraise the value of an antacid largely on its ability to neutralize hydrochloric acid either in vitro or in the stomach, in this study, the authors judged antacids by their ability to control symptoms and to bring about apparent healing of the ulcer. No other treatments such as rest or diet were employed. The most effective antacid therapy resulted in improvement in no more than 85 per cent of the patients, indicating that antacid therapy must be supplemented by other therapeutic measures. Alkaline powders, magnesium trisilicate, nonreactive aluminum hydroxide gels by themselves, and aluminum phosphate gel are unsatisfactory for long continued treatment. Reactive aluminum hydroxide preparations, in liquid gel or tablet form, appeared to be equal in clinical effectiveness but varied in their ability to produce constipation. The administration of nonreactive aluminum hydroxide gels resulted in a high incidence of constipation; the degree and severity may have been less than with the reactive preparations. The aluminum hydroxide preparations, although unaltered in antacid effectiveness by the addition of liquid petrolatum and homatropine methylbromide, may have their constipating effect decreased but not abolished. Sodium aluminum silicate is similar in its effect to reactive aluminum hydroxide. The effectiveness of a nonreactive aluminum hydroxide preparation may be increased and its constipating action decreased by the addition of magnesium trisilicate. The authors favored a means of scoring antacids in terms of clinical effectiveness and constipating action.

Geriatrics, Minneapolis

2:261-324 (Sept.-Oct.) 1947

Old Age: A Public Health Problem. W. M. Johnson.—p. 261.
Functional Psychoses in the Aging Simulating Organic Syndromes. E. B. Allen.—p. 269.
Training of Geriatric Physician. T. H. Howell.—p. 280.
Surgical Treatment of the Aged Arthritic. O. C. Kestler.—p. 283.
Nursing the Geriatric Patient. Elizabeth W. Hard.—p. 287.
American Society for Study of Arteriosclerosis. O. J. Pollak.—p. 291.
Experimental Approaches to Problem of Arteriosclerosis. W. C. Hueper.—p. 293.
Arteriosclerosis at Present—A Melting Pot of Arteriopathies. J. B. Wolffe.—p. 296.

Journal of Allergy, St. Louis

18:287-358 (Sept.) 1947

Antigenic Fractions in Ragweed Pollen. III. Further Evidence of Immunologic Specificity of Fraction 1 and 2. W. B. Sherman and A. Stull.—p. 287.
Chemical and Immunologic Studies of Low Ragweed Pollen Extract. H. S. Baldwin, A. W. Moyer and P. F. deGara.—p. 296.
Skin Tests in Dogs with Common Allergens. J. Cortez, M. Brunner and I. Altman.—p. 305.
Pyribenzamine Versus Specific Hyposensitization in Treatment of Pollinosis: Comparative Study. C. E. Arbesman, V. L. Cohen and H. Osgood.—p. 311.
Penicillin Aerosol in Prevention and Treatment of Respiratory Infections in Allergic Patients. S. J. Prigal, L. J. Morganbesser and F. P. McIntyre.—p. 325.
Personality Factors in "Allergic" Disorders. J. H. Mitchell, C. A. Curran, W. F. Mitchell, Iola Sivon and Ruth Myers.—p. 337.
*Flour Allergy. M. Schwartz.—p. 341.

Flour Allergy.—Schwartz says that in the allergy dispensary of the medical outpatient department of the Rigshospital, Copenhagen, Denmark, 35 persons with flour allergy (24 bakers, 2 millers, 7 confectioners, a woman working in a biscuit factory and a miller's son) were examined and treated during the last two and one-half years. Cutaneous reactions with different allergens and intracutaneous reactions with extracts of different kinds of flour (oat, rye, wheat and barley) were tried on all patients. Twelve were tested for intracutaneous reaction with a 0.1 per cent aqueous solution of potassium bromate (which is used for the improvement of the baking efficiency) and with a 0.1 per cent aqueous solution of monochloramine (which is used for bleaching the flour). The diagnosis of flour allergy was made in all cases on the past history in connection with the cutaneous reactions. The average sensitization time in these patients was slightly under eleven years. The treatment consisted of specific desensitization. This effected improvement in 13. In spite of these not very satisfactory results, the author

suggests continuation of such treatment. Increased use of machines in milling and particularly in baking and better ventilation will probably aid in the prophylaxis of this occupational disorder.

Journal of Aviation Medicine, St. Paul

18:307-398 (Aug.) 1947

Illusions Experienced by Aircraft Pilots While Flying. W. E. Vinacke. —p. 308.
Responsibilities of Practitioner in Civil Aviation in South Africa. R. W. S. Cheetham.—p. 326.
Medical Problems of Long Range Fighter Missions: Study in Fatigue. E. M. F. Weaver, J. D. Van Valkenburg, J. B. Stewart and others. —p. 341.
Intestinal Gas in Simulated Flight to High Altitude. H. A. Blair, R. J. Dern and V. G. Smith.—p. 352.
Aviation Ophthalmology. B. F. Payne.—p. 367.
Aviation Medicine in the Navy. J. C. Adams.—p. 379.
Medical Considerations in Certification of Civil Airmen. P. R. Huber. —p. 384.
Subacute Mercury Poisoning as a Potential Hazard in Nitrogen Dilution Chambers. G. M. Smith and K. B. Clark.—p. 390.
Effect of Explosive Decompression on Occurrence of Intravascular Bubbles. W. V. Whitehorn, A. Lein and F. A. Hitchcock.—p. 392.

Journal-Lancet, Minneapolis

67:285-316 (Aug.) 1947

Cancer Control in Montana. E. Hildebrand.—p. 285.
Advances in Medicine in World War II. J. H. Tillisch and W. A. Merritt.—p. 288.
X-Ray Technic for the Practitioner. L. A. Nash.—p. 291.

67:317-354 (Sept.) 1947

Glaucoma, Its Mechanism. M. T. Lampert.—p. 315.
Polycystic Kidney Disease. T. P. Grauer.—p. 319.
Dick Tests and Localized Reactions Following Intracutaneous Injections of an Erythrogenic Toxin in Student Nurses. Romana L. Todd. —p. 322.

Journal of Pharmacology & Exper. Therap., Baltimore

90:277-380 (Aug.) 1947. **Partial Index**

Action of Basic Amino Acids on Heart and Intestine. M. M. Winbury and P. J. Crittenden.—p. 293.
Influence of Rate of Administration on Lethal Dose of Cardiac Glycosides. G. J. Maresh and A. E. Farah.—p. 304.
Response of Penicillin-Resistant Strains of Staphylococcus Aureus to Extracts of Beef Brain. L. G. Nutini and E. M. Lynch.—p. 313.
Detoxification of Barbiturates. A. Dorfman and L. R. Goldbaum. —p. 330.
Intraperitoneal Toxicity of Some Glycols, Glycol Ethers, Glycol Esters, and Phthalates in Mice. L. Karel, B. H. Landing and T. S. Harvey. —p. 338.
L-Thiosorbitol and Bal as Antidotes in Phenylthiourea Poisoning. T. S. Harvey, H. J. Tatum and Sylvia Himmelfarb.—p. 348.
Pharmacology of 2-Amino-6-Methylheptane. E. J. Fellows.—p. 351.
Effect of Rutin on Permeability of Cutaneous Capillaries. A. M. Ambrose and F. DeEds.—p. 359.
Colorimetric Methods for Determination of Streptomycin. E. K. Marshall Jr., K. C. Blanchard and E. L. Buhle.—p. 367.

Laryngoscope, St. Louis

57:581-636 (Sept.) 1947

Intelligibility of Connected Discourse as Test for the "Threshold for Speech." G. A. Falconer and H. Davis.—p. 581.
Chronicle of 100 Years of Otolaryngology. A. C. Furstenberg.—p. 596.
Laryngocele—Report of a Case. J. W. McLaurin.—p. 616.
Problems of Tinnitus in Practice of Otolaryngology. A. P. Seltzer. —p. 623.

Problems of Tinnitus.—Seltzer thinks that tinnitus aurium can be more adequately expressed as head noise, since it is frequently not ringing in character and may present no demonstrable involvement of the ear itself. Head noises are not a disease entity but occur in a great variety of abnormal states; not, however, in all persons having these abnormalities. The author presents cases which illustrate the diversity of conditions in which head noises have been encountered by him. He shows that head noises accompany some ear disorders, but since they are not constantly present the pathologic change in the ear cannot be the determining factor. Head noises may be caused by drugs of widely differing physiologic action, but these drugs do not cause such head noises in all persons. Head noises occur in persons who are free of ear involvement or bodily disease. The author thinks that more careful study of persons with head noises, rather than head noises themselves, might lead to greater understanding of the subject.

Maine Medical Association Journal, Portland

38:187-208 (Aug.) 1947

Presidential Address. J. O. Piper.—p. 187.
Intracranial Aneurysms. W. J. German.—p. 190.

38:209-230 (Sept.) 1947

The Small Hospital and National Hospital Program. J. R. McGibony. —p. 209.
Value and Use of Clinical Record. D. E. Elsemore.—p. 212.

New Orleans Medical and Surgical Journal

100:53-94 (Aug.) 1947

Medical Aspect of 6-Propylthiouracil. L. Bain and E. Hull.—p. 53.
Thiouracil in Toxic Thyroid Disease: Preoperative Use in Public Hospital in a Non-Endemic Area. F. F. Boyce and D. D. Dieter.—p. 56.
Roentgenologic Aspect of Pneumonias. J. V. Hopkins Jr. and L. J. Menville.—p. 63.
Congenital Hemolytic Jaundice: Case Report with Splenectomy in Father and Son. R. Kapsinow.—p. 66.
Saddle Block Anesthesia in Obstetrics: Preliminary Survey of 50 Consecutive Cases. E. L. King and I. Dyer.—p. 70.
Hutchinson Memorial Cancer Detection Clinic. R. L. Pye.—p. 72.
Impotence. P. L. Getzoff.—p. 77.

100:95-140 (Sept.) 1947

Present Day Treatment of Malaria. A. J. Walker.—p. 95.
Enteric Infection or Infestation Sine Dysentery. D. N. Silverman and A. Leslie.—p. 101.
Extra-Intestinal Amebiasis. W. R. Akenhead.—p. 105.
Evaluation of Anti-Amebic Drugs. K. G. Nix.—p. 108.
Prematurity: An Orientation. Ethel C. Dunham.—p. 119.
Hoarseness: Implications and Proper Management. G. J. Taquino. —p. 125.

Ohio State Medical Journal, Columbus

43:1001-1096 (Oct.) 1947. **Partial Index**

Prolonged Survival of Heartbeat Following Cerebro-Respiratory Failure in Man. R. Zodikoff.—p. 1029.
Aspiration of Chest Fluid: Helpful Hints on Technique. R. C. Kirk. —p. 1033.
Succinate-Salicylate Therapy in Arthritis. M. M. Szucs.—p. 1035.
Fenestration Operation for Otosclerosis: Discussion and Report of Results. H. C. Rosenberger.—p. 1042.
Waterhouse-Friderichsen Syndrome in an Adult. M. Ginsburg and P. Bell.—p. 1045.
Carcinoma of Cervix in Young Age Group. J. H. Holzaepfel and P. J. Reel.—p. 1047.
Controlled Early Ambulation in Obstetrics. H. F. Burkons.—p. 1050.
Youngstown Receiving Hospital: Report to Council on Medical Education and Hospitals of American Medical Association. R. B. Poling. —p. 1054.
Status Thymico-Lymphaticus. H. Guerrero.—p. 1056.

Succinate-Salicylate Therapy in Arthritis.—Szucs studied the effects of calcium succinate or succinic acid and acetylsalicylic acid in 396 patients with various forms of arthritis. The average dosage employed was 34 grains (2.2 Gm.) of calcium succinate and 45 Gm. of acetylsalicylic acid daily divided into four equal doses. In rheumatoid arthritis succinate-salicylate was combined with administration of gold salts. Among the 208 cases of osteoarthritis improvement occurred in 95 per cent. Seventeen cases of acute infectious arthritis all exhibited prompt improvement. Twenty-two of 27 cases of rheumatoid arthritis exhibited improvement with apparent arrest of arthritic activity. Eight of 15 cases of mixed arthritis showed great improvement with complete or almost complete cessation of arthritic activity. Improvement of variable degree was observed in the majority of 95 cases of spondylitis. Among 34 cases of acute rheumatic polyarthritis all evidence of rheumatic activity disappeared. Pain, swelling, tenderness and fever subsided most promptly, and residual stiffness was frequently the last symptom to disappear. No significant roentgenologic changes were noted. The use of succinate in arthritis is predicated on its role as a physiologic catalyst in tissue oxidation.

Philippine Medical Association Journal, Manila

23:277-320 (July) 1947

Observations on Obstetric Practice in United States. A. Baens.—p. 277.
Cancer of Rectum. J. Estrada and P. T. Nery.—p. 283.
Optic Neuritis and Uveitis in Case of Benign Tertian Malaria. J. Tamesis and F. Nicolas-Fernando.—p. 285.
Paragonimiasis Westermani: Unexpected Case with Cystic Formation in Anterior Abdominal Wall. T. P. Pesigan, L. F. Torres Jr. and P. M. Recio.—p. 293.
Reminiscences of Wartime Civilian Medical Practice: II. Malnutrition and Avitaminosis. C. B. Lara.—p. 299.

Psychiatry, Washington, D. C.

10:239-354 (Aug.) 1947. **Partial Index**

Remobilization for Enduring Peace and Social Progress. H. S. Sullivan. —p. 239.
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Notes of Investigation, Therapy and Education in Psychiatry and Their Relation to Schizophrenia. H. S. Sullivan.—p. 271.
Esthetic States of Mind. H. B. Lee.—p. 281.
Function of Interpersonal Relations in Neurosis of Combat. E. A. Weinstein.—p. 307.
The "Old Sergeant" Syndrome. R. Sobel.—p. 315.
Social Dynamics of Physical Disability in Army Basic Training. D. M. Schneider.—p. 323.

Public Health Reports, Washington, D. C.

62:1391-1430 (Sept. 26) 1947

Studies on Air Transmission of Micro-Organisms Derived from Respiratory Tract. I. Lactobacillus Acidophilus as Test Organism. H. du Buy, F. A. Arnold and B. J. Olson.—p. 1391.
Case of Q Fever Probably Contracted by Exposure to Ticks in Nature. C. M. Eklund, R. R. Parker and D. B. Lackman.—p. 1413.

62:1431-1465 (Oct. 3) 1947

Statistical Problems in Assessing Methods of Medical Diagnosis, with Special Reference to X Ray Techniques. J. Yerushalmy.—p. 1432.
Outline of Statistical Treatment of Problem of Diagnosis. J. Neyman. —p. 1449.

62:1467-1498 (Oct. 10) 1947

*Isolation of Poliomyelitis Virus from Human Serum by Direct Inoculation into Laboratory Mouse. H. Koprowski, T. W. Norton and W. McDermott.—p. 1467.
Effect of Topically Applied Fluorides on Dental Caries Experience: V. Report of Findings with 2, 4 and 6 Applications of Sodium Fluoride and of Lead Fluoride. D. J. Galagan and J. W. Knutson.—p. 1477.
*Recovery of Ornithosis Virus from Pigeons in Baltimore, Maryland. D. J. Davis and C. L. Ewing.—p. 1484.

Isolation of Poliomyelitis Virus from Human Serum.—Koprowski and his co-workers present the history of W. W., a man aged 29, who presumably had poliomyelitis. Specimens of serum and cerebrospinal fluid obtained from W. W. on the day of his admission to the hospital were each inoculated intracerebrally into 12 dilute brown agouti (dba) mice, 12 albino Swiss mice, 2 hamsters and 2 cotton rats. As none of the animals presented signs of illness, a series of blind passages was initiated. At intervals ranging from six to twenty-seven days after the original inoculation, 1 animal from each group was killed and bacteriologically sterile 10 per cent suspension of the brain and spinal cord tissues was passed into another group of animals of the same species and strain. A total of three blind passages was made. In 1 mouse (dba) paralysis of the hind legs developed on the twenty-second day after inoculation with the second mouse brain passage (also dba) of the serum of the patient. This animal was killed and, after bacterial sterility of its brain and spinal cord tissues was verified, a 10 per cent suspension of combined tissues was inoculated into 6 dba and 6 albino Swiss mice. In all these inoculated animals paralysis developed after an incubation period ranging from nine to twenty-six days, and 3 of each group died during the same period. The remaining mice were killed when moribund. The infection thus established has been carried through twenty-two consecutive mouse passages by continuous intracerebral transfers of brain and spinal cord tissues. The authors think that the W. W. virus isolated in the dba mice was present in the circulating blood of the patient and is a strain of poliomyelitis virus. They mention facts which they think justify classification of the W. W. strain as a virus of poliomyelitis.

Recovery of Ornithosis Virus from Pigeons in Baltimore.—David and Ewing say that although nearly all reported cases of ornithosis in which the source of virus could be traced have been contracted from privately owned pigeons, there remains the question of possible danger to human beings from exposure to wild pigeons present in or about public parks, squares or buildings. In order to secure data on which to estimate this potential danger to the population of Baltimore, an investigation of the infection among wild pigeons was undertaken. Active ornithosis virus identified by morphologic and serologic studies was recovered from the organs of 15 of 100 adult pigeons. Infected birds were found within the city at four of eight different capture locations. In spite of the demonstrated prevalence of infection among wild pigeons, the paucity of recognized human ornithosis suggests that wild pigeons do not constitute a serious public health hazard.

Southern Medical Journal, Birmingham

40:801-880 (Oct.) 1947

*Treatment of Rocky Mountain Spotted Fever with Para-Amino-Benzoic Acid: Comprehensive Plan. S. F. Ravenel.—p. 801.
Discussion of Common Meningitides and Their Treatment. M. W. Beach and B. O. Ravenel.—p. 813.
Georgia's Community-Wide Surveys: Chest X-Ray, Blood Test and Dental. L. M. Petrie.—p. 821.
*Sodium Chloride and Fluid Replacement in Treatment of Malaria. N. M. Newport.—p. 825.
Rh-Protective Factor in Congenital Hemolytic Disease (Erythroblastosis Fetalis). A. Bloxsom.—p. 829.
Management of Pigmented Nevi and Malignant Melanomas. G. T. Pack. —p. 832.
Huge Calcified Intracranial Oligodendroglioma. C. E. DeAngelis and Elizabeth S. DeAngelis.—p. 838.
*Calcinosis: Review of Literature and Report of 2 Cases. F. T. Moran. —p. 840.
Pilonidal Sinus: Treatment by Eventration: Report of 618 Cases. M. M. Marks.—p. 844.
"Pentothal" for Tonsillectomy in Children. S. L. Fox and S. M. Shane. —p. 848.
Reimplantation of Ureter into Kidney Pelvis Following Avulsion. A. E. Goldstein and S. W. Rubin.—p. 851.
Experiences with Sodium "Pentothal." R. J. Brady.—p. 855.
Treatment of Certain Types of Scleroderma. C. C. Dennie and D. B. Morgan.—p. 860.
Treatment of Sterility in Female. L. J. Glober.—p. 865.
Krukenberg Tumor, Primary: Follow-Up Report. C. J. Andrews. —p. 869.
Observations on Use of "Demerol." B. R. Powers.—p. 870.
Near Electrocution as Cause for Protrusion of an Intervertebral Disc: Case Report. W. G. Haynes and G. L. Ross.—p. 874.

Para-Aminobenzoic Acid in Rocky Mountain Spotted Fever.—Ravenel reviews the experimental and clinical background for the use of para-aminobenzoic acid in Rocky Mountain spotted fever, and reports on 6 patients treated with para-aminobenzoic acid. The striking feature about these patients was the amazing speed with which the fever dropped, rash faded and recovery ensued in 5 of the 6 patients as soon as adequate blood concentrations of para-aminobenzoic acid were achieved. The sixth patient received far too little of the drug materially to affect the course of the disease. One-half a gram of para-aminobenzoic acid per pound (1.1 Gm. per kilogram) of weight per day was given. The drug was partially buffered with 10 cc. of a 5 per cent solution of sodium bicarbonate per gram to prevent acidosis and nausea. The blood level of the drug should be estimated daily; 60 to 80 mg. per hundred cubic centimeters may be necessary, but concentrations over 80 may be hazardous. Supportive treatment is extremely important. The fluid and electrolyte balance should be restored to normal by means of intravenous injections of dextrose in isotonic solution of sodium chloride or lactated Ringer's solution. Acidosis should be corrected by intravenous and subcutaneous injections of sixth-molar sodium lactate solution in appropriate dosage. The serum protein level of the blood depleted in this disease by starvation, vascular damage and hepatic failure should be restored to normal by intravenous injections of plasma. A high intake of vitamins should be furnished by mouth, by gavage or parenterally if necessary. Thiamine is given to help prevent shock, ascorbic acid to obviate endothelial damage to blood vessels, vitamin B complex and K for damage to the liver and increased prothrombin time.

Sodium Chloride and Fluid Replacement in Malaria.—Newport thinks that the shocklike syndrome which may develop in severe malaria is at least partially due to deficiency of sodium chloride in the presence of dehydration and toxemia. Whole blood chloride values, obtained in 18 cases of malaria, showed low normal and subnormal values. Urinary chloride excretion was also subnormal. The author thinks that the use of antipyretic drugs, especially acetophenetidin, to combat hyperpyrexia is to be condemned because of their tendency to depress the vasomotor nervous mechanism, provoking and prolonging excessive diaphoresis. As preferable alternatives he recommends intravenous administration of moderately cool isotonic solution of sodium chloride with 5 per cent dextrose, ice bags and other forms of hydrotherapy. Once the syndrome of shock is defi-

nitely established administration of blood plasma is recommended. A case report is cited in which the patient manifested signs of progressive shock. His condition promptly improved after administration of saline-dextrose solution intravenously.

Calcinosis.—According to Moran calcinosis is a rare condition characterized by the deposition of calcium salts in the tissues. These may be localized around joints, frequently bilaterally, in the skin and subcutaneous tissue, muscles and tendons. To the first condition the term calcinosis circumscripta has been given, and to the second calcinosis universalis. Although over 100 cases have been studied and reported, both the diagnosis and etiology remain obscure. Pathologic study of biopsy material from the 2 cases reported here showed no evidence of tissue necrosis in one, while in the second the calcium deposits were found in areas where considerable fat necrosis had taken place. In neither case was there any association with scleroderma, sclerodactylia or Raynaud's disease. Both of the reported cases were of the calcinosis universalis type. One concerned a boy of 9 and the other one a girl aged 1 year.

Southern Surgeon, Atlanta, Ga.

13:613-712 (Sept.) 1947

Acute Perforated Gastroduodenal Ulcer. C. H. Avent, R. H. Patterson and J. M. Chambers Jr.—p. 613.
Indications for Corneal Transplantation. J. W. McKinney.—p. 622.
Ingestion of Lye: A Serious Problem. C. D. Blasslingame, R. H. McArthur and R. H. Atkinson.—p. 626.
Diagnosis and Treatment of Abdominal Pregnancy. F. E. Whitacre and H. D. Lynn.—p. 635.
Ruptured Intervertebral Discs: Pathologic, Diagnostic and Therapeutic Considerations. J. S. Speed, M. J. Stewart and P. C. Trout.—p. 645.
Intrathoracic Neoplasms, Real and Apparent. D. Carr, E. F. Skinner and W. E. Denman.—p. 653.
Present Concept of Thromboembolic Venous Disease. H. Wilson and R. Patterson.—p. 670.
Advances in Surgical Treatment of Congenital Anomalies in Infants and Children. C. B. Olim.—p. 681.
Acute Subdural Hydromas. N. Gotten and C. D. Hawkes.—p. 689.
Value of Skin Temperatures in Determining Site of Amputation in Diabetic Gangrenes: Preliminary Report. E. M. Stevenson and R. Patterson.—p. 696.

Surgery, Gynecology and Obstetrics, Chicago

85:419-546 (Oct.) 1947

*Intracranial Meningiomas, Surgical Results. F. C. Grant.—p. 419.
*Rh Factor in Obstetrics: Report of 572 Cases in Infants of Rh Negative Mothers, 232 of Whom Received Transfusions of Mother's Blood. H. W. Mayes.—p. 432.
Pathologic Aspects of Death Following Major Surgery: Analytic Study of Postmortem Examinations of 57 Cases. F. H. Tanner and G. Cullen.—p. 446.
Study of Systolic Blood Pressure and Pulse Rate in Traumatic Shock. J. D. Stewart, P. A. Kennedy and H. W. Hale Jr.—p. 453.
Indications for Simple Mastectomy. D. P. Slaughter and L. W. Peterson. —p. 456.
Transabdominal Gastric Vagotomy. Study of Anatomy and Surgery of Vagus Nerves at Lower Portion of Esophagus. L. R. Dragstedt, H. J. Fournier, E. R. Woodward and others.—p. 461.
Mediastinal Cysts and Tumors. M. L. Bradford, H. W. Mahon and J. B. Grow.—p. 467.
Technique for Portacaval Anastomosis (Eck Fistula). C. S. Welch. —p. 492.
Tumors of Islets of Langerhans. R. Lopez-Kruger and M. B. Dockerty. —p. 495.
*Appendicitis Complicating Pregnancy, Labor and Puerperium. R. L. Meiling.—p. 512.
Progress in Surgical Management of Diverticulitis of Sigmoid Colon. J. deJ. Pemberton, B. M. Black and C. R. Maino.—p. 523.
Methods for Differential Diagnosis of Painless Jaundice. J. R. Robinson and C. A. Moyer.—p. 535.

Intracranial Meningiomas, Surgical Results.—Grant reviews the surgical results obtained in 149 meningiomas of which 92 involved females and 57 males. The ages of the patients varied between 2 and 76 years. The average period of symptoms prior to operation was between two and three years. Injury appears to have been a factor in 14 cases, all vault tumors. There were 25 operative and 3 nonoperative deaths in this group of 149 meningiomas. Of the 121 survivors 113 could be traced. Of these 11 have died, 7 as the result of recurrence and 4 from intercurrent disease. Among the 102 survivors, 34 are known to be alive and well and working at their previous or similar jobs. Sixty-eight survived but are handicapped by postoperative complications. Seventeen are incapacitated by loss of vision, present in each instance prior to operation. By proper methods, diagnosis and localization of the tumor can be correctly made in 98 per cent of the cases. Electrosurgical aids, suction and especially preoperative and postoperative supportive measures, plus prompt and adequate control of intracranial pressure, have reduced the operative mortality in recent years from 21 to 8.6 per cent. These tumors are benign. The problem is total extirpation of the tumor with minimum damage to adjacent brain areas, thus reducing neurologic sequelae. The record here presented might have been improved if a more conservative attack, as represented by a two stage procedure, had been employed with greater frequency.

The Rh Factor in Obstetrics.—Mayes says that in the three year period from the spring of 1944 through 1946, the Rh factor was determined at the Methodist Hospital in Brooklyn in 7,032 women; 1,042, or 14.7 per cent of these, were Rh negative. During the same period, 572 Rh-negative mothers were delivered. Two hundred and thirty-two of the infants received transfusions of mother's blood, with the loss of no viable baby from erythroblastosis. In the group of 340 not receiving mother's blood there were 5 deaths from erythroblastosis; 4 received donor's blood, and 1 had no transfusion. A study of the compatibility of Rh-negative mother's and baby's blood showed that in 80 cases there were only 10 in which there was any agglutination when the mother's cells and baby's serum was used. There were 17 babies with erythroblastosis given transfusions of blood of Rh-negative group O, with the loss of 4 babies. Experience at the Methodist Hospital, Brooklyn, has been quite in contrast to that of the great majority who have written about the Rh factor and its effect on the newborn infant. The impression has been gained that the Rh factor, although important in erythroblastosis, is not the exciting factor. If it were, many more babies of Rh-negative mothers would have the disease. Moreover, if the anti-Rh agglutinins in the mother's blood cause the hemolysis in the baby's blood, one would be unable to give the mother's blood freely, as has been done. Most of the babies in the cases reported their mothers nursed without untoward symptoms. The baby is apparently better off with its mother's milk, in spite of the anti-Rh agglutinins which it may contain.

Appendicitis Complicating Pregnancy.—Meiling presents a thirteen year statistical summary of the records of the University Hospitals of Cleveland, showing the incidence of abdominal disease complications of pregnancy. Four cases of acute appendicitis complicating labor or the puerperium which occurred in Cleveland during 1945 to 1946 are described. The author regards as the optimum treatment of appendicitis during the first seven and a half months of pregnancy a well timed and properly executed appendectomy, with the least possible manipulation of the uterus, gastrointestinal decompression, administration of blood, plasma and fluids intravenously and adequate chemotherapy and antibiotic therapy. Some authors report good results from the postoperative intravenous administration of estrogen-progesterone to avoid abortion or premature labor. A difficult problem presents itself when appendicitis occurs during the last two and a half months of pregnancy, particularly if perforation of the appendix has taken place followed by diffuse peritonitis. For such patients the author advises cesarean section by low transverse laparotrachelotomy, followed by properly executed appendectomy, intraperitoneal implantation of 5 to 10 Gm. of sulfanilamide or sulfathiazole crystals, massive doses of penicillin for several days accompanied by gastrointestinal decompression, blood and plasma transfusions and intravenous nutrition.

Wisconsin Medical Journal, Madison

46:765-860 (Aug.) 1947

Role of Hypersensitivity in Pathogenesis of Rheumatic Fever. S. M. Evans.—p. 783.
Role of Hemolytic Streptococcus in Rheumatic Fever. E. B. Cohen. —p. 786.
Present Status of Salicylate Therapy in Rheumatic Fever. J. K. Curtis. —p. 790.
Rheumatic Fever Control: Important Pediatric Problem. S. F. Morgan. —p. 792.
Vagotomy. L. H. Kretchmar.—p. 794.
Avulsion of Distal End of Biceps Tendon: Report of Case. S. Sakaguchi.—p. 797.
Report of Janesville Tumor Clinic. W. T. Clark.—p. 798.

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FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

Australian J. Exper. Biol. and M. Science, Adelaide

25:1-86 (March) 1947. **Partial Index**

Staphylococcal Bacteriophages: Effect of Penicillin on Staphylococcal Bacteriophages. Phillis M. Rountree.—p. 9.
Influence of Ferrous Iron in Determination of Ascorbic Acid. F. E. Huelin and I. M. Stephens.—p. 17.
Occurrence of Salmonella Types in Australia. Nancy Atkinson, Gwendolyn M. Woodroofe and A. M. Macbeth.—p. 25.
Cystine, Methionine and Sulfate Excretion in Cystinuria. J. B. Cleland. —p. 33.
Relation Between Some Reversible Reactions of Hemoglobin and the Formation of Green Derivatives. H. F. Holden.—p. 47.
Colorimetric Determination of Hemoglobin. H. F. Holden.—p. 57.
*Histamine and Histaminase in Chronic Myeloid Leukemia of Man: I. Histamine in Blood of Chronic Myeloid Leukemia. J. B. Thiersch. —p. 73.
Histamine and Histaminase in Blood of Cases of Lymphoid and Monocytic Leukemia. J. B. Thiersch.—p. 79.

Histamine and Histaminase in Leukemia.—Thiersch found that the histamine content of blood plasma in myeloid leukemia is not higher than that of plasma of normal persons. The histamine content of the plasma does not increase under and after high voltage roentgen irradiation when the high white blood count falls. No increase in histaminase was found in myeloid leukemia without and under treatment with high voltage roentgen radiation. It appears that irradiation impedes the output of leukemic cells but does not destroy the cells on a large scale.

British Medical Journal, London

2:441-476 (Sept. 20) 1947

Hematemesis and Melena. F. A. Jones.—p. 441.
Gastro-Enteritis of Unknown Etiology. G. T. Cook and B. P. Marmion. —p. 446.
Suppurative Arthritis of Hip Joint Treated with Penicillin. K. J. Gilchrist.—p. 450.
*Treatment of Varicose Veins. A. M. Boyd and D. J. Robertson. —p. 452.
Penicillin by Intra-Oral Drip. G. R. Royston.—p. 454.

Treatment of Varicose Veins.—Boyd and Robertson state that varicose veins seldom cause serious discomfort. A careful clinical assessment should be made before advising operation. The most popular operation for varicose veins is ligation combined with retrograde injection of sclerosing solutions. Unsatisfactory results of treatment of varicose veins are due to recurrence and to deep thrombophlebitis. Recurrence can usually be explained by inadequate ligation. Deep thrombophlebitis is a serious disability. The authors demonstrate the possible danger resulting from high retrograde injection of sclerosing solutions. The ease with which fluids injected distally from the groin level pass into the femoral veins suggests that high injection into the thigh segment is unwise. There is much less risk below the knee. In the opinion of the authors operative treatment of varicose veins should consist of adequate ligation with, if necessary, distal injection from knee level of not more than 5 cc. of sclerosing solution.

Lancet, London

2:413-456 (Sept. 20) 1947

Future of Preventive Inoculations. H. J. Parish.—p. 413.
*Meningitis Leptospirosa. E. M. Buzzard and J. A. H. Wylie.—p. 417.
*Dicumarol Poisoning with Relapse: Report of a Case. G. Thorsén. —p. 420.
Intravaginal Implantation of Hormone Pellets. B. Zondek.—p. 423.
Internal Pneumonolysis: Results in 393 Cases. F. L. Wollaston.—p. 424.
Adrenalectomy and Prostatic Carcinoma: Report of 3 Cases. H. T. Cox. —p. 425.

Meningitis Leptospirosa.—Buzzard and Wylie point out that shortly after the recognition of Leptospira icterohaemorrhagiae as the causal organism of Weil's disease, French clinicians observed that meningitis might be a striking feature of the clinical picture, especially in the milder anicteric forms. Reports in 1936 and 1937 from France and Holland indicated a high incidence of meningitis in patients who had contracted Weil's disease as a result of bathing. This condition was designated as meningitis leptospirosa. Ten cases of Weil's disease were seen at their infirmary between 1926 and 1945, in 6 of which there was a history of immersion into water. The authors report 5 more patients admitted between July 27 and Sept. 13, 1946. These patients presented a picture of mild benign meningitis. In every case contact with rats or their excreta could be demonstrated, the 3 youngest having a recent history of river bathing and the 2 adults running occupational risks. The onset in every case was sudden, with headache and pyrexia. The fever lasted an average of eight days, during which time headache, vomiting and photophobia were the main symptoms; yet the mind was clear. The blood serum gave agglutination reactions against suspensions of L. icterohaemorrhagiae. In meningitis leptospirosa immersion in water seems to be of even greater importance than in typical Weil's disease. Conjunctival suffusion is the most constant finding both in the icteric and in the meningeal forms; it is often accompanied by photophobia, and both may relapse for a few days during the third week. It is suggested that the organisms may gain access to the blood stream via the conjunctiva, nasal mucosa and fauces in bathing and that such an entry may predispose to the meningeal form of the disease.

Dicumarol Poisoning with Relapse.—Thorsén reports the case of a woman, aged 41, for whom "A.T. 10" (dihydrotachysterol) had been prescribed. By mistake she was given dicumarol, which in Sweden is called "A.P." She took 14 Gm. of dicumarol in the course of three weeks. She complained of headache, dizziness and tiredness while taking the drug, and during the last week she bled from the nose and had microscopic hematuria. The day before admission to the hospital she experienced severe epigastric pain and vomited some blood-stained mucus. Although there was severe hemorrhage from almost all mucous membranes and into the peritoneal cavity, no evidence of hepatic or renal damage was obtained. With repeated blood transfusions and administration of vitamin K by mouth the bleeding ceased in eighteen days. A relapse occurred three and one-half months later with further bleeding. Blood transfusion alone had no lasting effect, but with intravenous administration of vitamin K recovery was rapid. No relation between hemorrhage and prothrombin time, bleeding time, or clotting time was established on either occasion. It seems advisable that hemorrhage or other signs of poisoning after treatment with dicumarol should be treated with repeated transfusions of fresh blood and large doses of vitamin K intravenously. After dicumarol therapy a careful watch should be kept for late sequelae.

Acta Medica Scandinavica, Stockholm

128:413-508 (Aug. 30) 1947

Normal Serum Esterase and Pancreatic Lipase in Serum in Liver Diseases. H. O. Lagerlöf.—p. 413.
Changes in Organism Resulting from Insufficient Gas Exchange: I. Certain Changes in Blood in Insufficient Gas Exchange, with Special Reference to Its Inorganic Phosphorus, Calcium, Glucose and Bicarbonate Contents, and to Its Capacity for Coagulation. H. Colldahl. —p. 417.
*Clinical Observations on Malaria Tertiana in Finland, and Difference Between Autumn and Spring Malaria. C. A. Hernberg.—p. 428.
*Prognosis in Medically Treated Sciatica: Follow-Up Investigation of 256 Patients. Ø. Ytrehus.—p. 452.
Sciatica, Especially Prognosis by Conservative Treatment. G. Boysen. —p. 473.
Use of Pyramidon in Treatment of Rheumatic Fever. S. Nörregaard. —p. 486.
Humoral Autoregulation in Activity of Vegetative Nervous System. D. E. Alpern.—p. 489.
Evidence for Three Component System of Renal Excretion. J. A. Barclay, W. T. Cooke and R. A. Kenney.—p. 500.

Tertian Malaria in Finland.—Hernberg reports 1,574 cases of tertian malaria which occurred in Finland from 1941 to 1945. Eleven hundred and forty-five of these were primary cases and 429 were recurrences. The clinical picture corresponds in the main with that of malaria in other countries, but the disease is more benign. There were no fatal cases, there was less tendency to relapses and the enlargement of the spleen was observed less frequently than in other countries. The "spring" malaria seemed to be in the early course of the disease more benign than the autumnal malaria. The sedimentation rate was lower during the first week, the size of the spleen was normal more often and the hemoglobin and the erythrocyte counts were higher in spring than in fall. In its later course the disease became more malignant in spring than in fall, as was demonstrated by the greater tendency of the spring malaria to relapse and by the shorter intervals between the recurrences in spring. The incidence of

irregular fever was higher and that of double infection with tertian malaria was lower in spring than in fall. There were no recurrences during the period from December to March. The relapses of autumnal malaria occurred in great numbers after a long interval in the following spring. This phenomenon and the fact that cases with a prolonged incubation period occurred frequently after autumnal epidemics suggest that the virulence of the Plasmodium decreases during the season in which the days are shortened; it may thus be explained that the disease is more benign in northern latitudes. An unknown resting form of the malaria Plasmodium is suggested.

Prognosis in Sciatica.—Ytrehus treated 256 patients with sciatica, 150 men and 106 women, with strict rest in bed until they were free from pain when resting and until positive Lasègue's sign was first noted at 60 degrees. Additional treatment consisted of application of local heat and of administration of salicylic acid. Roentgen treatment was given in 21 cases of spondylitis deformans. On discharge from hospital 120 patients (46.7 per cent) were free from symptoms. The average time spent in the hospital was 37.2 days and the average number of days of illness was 92.3. In 220 cases a follow-up investigation was made by questionnaire and 140 patients were personally examined. Seven of these patients had been operated on for sciatica. Of the remaining 213 patients, 72 (33.8 per cent) were observed to be fully capable of work without pain, 80 (37 per cent) were fully fit for work but still had some pain and 56 (26.8 per cent) had more or less reduced working capacity on account of the sciatica. None of the patients was totally incapacitated for work and only 7 (3.3 per cent) had to look for less hard work. In 5 (2.4 per cent) the capacity for work was reduced because of complicating diseases. Sixty-four patients (about 30 per cent) had recurrences which in 23 patients (10.8 per cent) required readmission to the hospital. In patients with a positive Lasègue's sign at less than 30 degrees, the duration of the sciatica was considerably longer and the tendency to recurrence was greater than in those with a positive Lasègue's sign at from 30 to 60 degrees or more. Prognosis was less favorable in patients engaged in hard manual work than in those doing office work. Except for a few cases with severe neurologic disturbances and intolerable pain, conservative treatment should be practiced. If after three months the patient does not show satisfactory progress, the case should be reconsidered with regard to surgical intervention. No patient should be operated on before he has undergone medical treatment in hospital.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

91:2485-2560 (Sept. 6) 1947. **Partial Index**

Defects in Nerve Tissues Caused by Nutritional Deficiencies. P. J. van der Schaar.—p. 2491.
*Skin Eruptions Caused by Thioglycolic Acid Used in Cold Waving Process. C. H. Beek.—p. 2500.
Excochleation of Tuberculous Focus in Calcaneus and Filling with Piece of Iliac Crest. T. Boesman.—p. 2502.
*Comparison of Occurrence of Tubercle Bacilli in Gastric Juice, Tracheal Lavage Fluid and Sputum. K. Magnus and J. van der Hoeden. —p. 2507.

Skin Eruptions Caused by Cold Waving Process.—Beek reports 2 hairdressers with eczema on hands and arms. Sensitivity tests with numerous substances were negative in result in the first patient, and the eruption became more severe after working with the cold wave process. A patch test was now made with thioglycolic acid, and this produced a strongly positive reaction. Similar tests in the second patient had the same results. Avoidance of thioglycolic acid prevented relapses in both patients. Patch tests with thioglycolic acid were made on 100 women and on 20 men. Three per cent of the women and 4 per cent of the men showed considerable irritation following local application of the acid. These observations indicate that hairdressers may have occupational eczema if they use thioglycolic acid for the cold waving process.

Occurrence of Tubercle Bacilli in Stomach, Trachea and Sputum.—A comparative search for tubercle bacilli in sputum, tracheal lavage fluid and gastric juice convinced Magnus and van der Hoeden that sputum and tracheal lavage reveal tubercle bacilli more readily than does culture of the gastric juice. More than 50 per cent of cultures of the gastric contents failed to yield tubercle bacilli. This may be explained partly by the fact that the gastric juice at the body temperature of 37 C. (98.6 F.) exerts a damaging effect on the tubercle bacilli. Growth of tubercle bacilli in the gastric contents was often inhibited and in many instances the culture mediums were contaminated by other micro-organisms. Patients generally prefer tracheal lavage to gastric lavage. Thus when sputum culture proves impossible or inadequate, tracheal lavage is preferable to gastric lavage when searching for tubercle bacilli.

Paris Medical

2:473-484 (Oct. 4) 1947

Dermoid Cysts of Inferior Mediastinum. F. Sommer and M. Demoullin. —p. 473.
*Tuberculosis of Pancreas (8 Cases). C. Massias.—p. 476.
Erythroderma Due to Salt of Gold: Penicillin Treatment, Recovery. E. Wolinetz.—p. 479.

Tuberculosis of Pancreas.—Massias reports 8 cases of tuberculosis of the pancreas in 2 men aged 21 and 18 respectively and in 6 women between the ages of 16 and 32, all of them natives of Indo-China. The diagnosis was based on microscopic examination in the course of 2,000 necropsies which were performed at the Medical Clinic of the Medical Faculty of Hanoi, Indo-China. Specific, follicular, tuberculous lesions with Koch's bacilli in the pancreas are extremely rare. On macroscopic examination they pass unobserved at necropsy except for occasional instances of pseudotumoral type. Tuberculosis of the pancreas does not have the characteristics of a clinical entity. In the author's cases the presence of Koch's bacilli in the pancreas was demonstrated on systematic microscopic examination of the pancreatic tissue. In his cases, other organs were involved in addition to the pancreas. Tuberculosis of the lymph nodes from primary infection was predominant in young adults.

Pediatria del Medico Pratico, Turin

22:83-120 (March) 1947. **Partial Index**

*Ethyl Ethers of Morrhuic and Linoleic Acids in Therapy of Pulmonary Tuberculosis in Children: Effects of Proteins of Plasma, Hemoglobin, Hematocrit Value and Capacity of Blood for Retaining Oxygen. G. C. Abba.—p. 83.

Therapy of Pulmonary Tuberculosis in Children.—The subjects of this report were 16 children, between the ages of 3 and 10 years, with pulmonary tuberculosis. The treatment consisted of a daily injection of a preparation of ethyl ether of linoleic and morrhuic acids, up to a total dose of twenty injections either on consecutive days or in two series of ten injections in ten days with an interval of a week between the series of injections. The treatment resulted in increased appetite, improvement of the general health, increased blood and plasma protein, blood hemoglobin, blood cells and the capacity of the blood to retain oxygen.

Praxis, Bern

36:563-580 (Aug. 14) 1947

*Second Attack of Poliomyelitis. H. Zellweger.—p. 563.
Blood Donor Service of the Swiss Red Cross. A. von Albertini.—p. 567.

Second Attacks of Poliomyelitis.—Zellweger cites reports to the effect that second attacks of poliomyelitis are on the increase in recent years. He cites 38 reported instances of second attacks. Bridge, Clarke and Abbe observed symptoms indicative of inapparent poliomyelitis in persons who had had poliomyelitis previously. Second attack of poliomyelitis could be produced experimentally in animals. Animals contract poliomyelitis more readily a second time when they are infected with another strain of virus and by way of a different portal of entry than at the first attack. The existence of a specific humoral immunity is unlikely, but a local resistance exists at the portal of entry and in the nerve tracts which formerly had been in contact with the virus. It may also be assumed that a cellular immunity exists in the central nervous system. Presumably, every new poliomyelitis infection leads to a combat between the virus and the nervous tissue of the host. If the virus enters a second time through the same portal of entry, the host organism will usually be victorious owing to the local immunity, but even if the virus enters by a different route, a specific resistance of the central nervous system or some parts of it will have a favorable effect on the course of the disease.

Book Notices

Treatment of the Patient Past Fifty. By Ernst P. Boas, M.D., Associate Physician, Mount Sinai Hospital, New York City. Third edition. Cloth. Price, $5.75. Pp. 479, with 38 illustrations. Year Book Publishers, Inc., 304 S. Dearborn St., Chicago 4, 1947.

This is designed to be a practical handbook for the physician dealing with senescent or senile patients and, as such, will be particularly useful. Emphasis is properly placed on practical geriatrics. Two short chapters dealing with aging and disease and the aging process are worth while as a matter of orientation, even though some statements are made that are of doubtful validity.

Dr. Boas stresses the importance to the physician of continually bearing in mind his responsibility to attempt to maintain the aged person as a "useful member of society." Practical suggestions are made on such matters as regulation of body weight, caloric intake and dietary factors for the senile patient. Also considered are rest, exercise and sleep requirements.

A major portion of this volume is devoted to consideration of cardiovascular diseases in senility. This is most fitting, because this group of diseases is the most common and serious with advancing age. Pathologic changes in the heart, aorta and arteries are discussed in detail. An excellent survey of calcification of the vessels is included, and these changes due to age are well illustrated with lucid photographs.

Particularly striking is figure 7 on page 133, which shows that calcification of the arteries of the leg can be detected even in the gross by means of the radiograph.

A general survey of diseases of the lung relatively peculiar to aged patients is included. Gastrointestinal ailments, which so frequently harass the aged patient, are given detailed consideration. Diagnosis and treatment of senile constipation, peptic ulcer, cancer of the stomach and other organs, diverticuloses, etc., are taken up carefully by Dr. Boas.

The chapter on diseases of the bones and joints is particularly worth while. The reader gets a clear picture of osteoarthritis, osteoporosis, gout and fractures in aging.

The concise style of writing will appeal to the large majority of readers. References are cited throughout the book, enabling one to examine specific problems in the original literature. This is a technic that could be more widely applied to good advantage.

Viruses and Virus Diseases of Plants. By Melville T. Cook, Ph.D., Sc.D., Professor of Plant Pathology in Rutger University. Paper. Price, $4. Pp. 244, with illustrations. Burgess Publishing Co., 426 South 6th St., Minneapolis 15, 1947.

This book reviews the current status of knowledge of the plant viruses. The first filterable virus isolated and clearly identified was the virus of tobacco mosaic disease; this virus has been successfully crystallized and shown to retain its infectivity in the crystalline state. Altogether about one hundred and fifty distinct plant viruses have been identified. Although these viruses differ in many respects from those causing disease in human beings or animals, there are many characteristics in common; much of what has been learned about one of these large groups of viruses has been, and perhaps may in the future be, applied with profit to a study of the others.

Major sections of the book are devoted to discussion of the nature and properties of plant viruses, the reaction of host plants to viruses, transmission and control. There is a good index.

The material dealing with such aspects of the virus problem as filtration, the influence of light, chemicals and hydrogen ion concentration, the size and shape of viruses, the effects of enzymes and virus mutation will be of interest to students of the human and animal viruses as well as to those concerned primarily with the plant pathogens.

Le diagnostic du sexe fœtal durant la grossesse. Par le Docteur Pierre Klotz. Paper. Price, 300 francs. Pp. 156, with illustrations. G. Doin & Cie, 8, Place de l'Odéon, Paris, 6e, 1947.

This book is really divided into two parts. In the first the author discusses almost seventy different methods proposed during the last four thousand years to determine the sex of the unborn child. With the passing of time these methods of determining the sex have been based on astrology, clinical examination, chemistry, radiography, allergic reactions and, finally, endocrinology. In the second part of the book the author makes a plea for the method advocated by Dorn and Sugarman (THE JOURNAL, Nov. 12, 1932, page 1659). The test developed by these authors is carried out as follows: Ten cc. of urine from a woman pregnant five or more months are injected into the external marginal vein of the ear of a male rabbit during the period of testicular migration. If forty-eight hours later the testicles of the animal fail to show any signs of congestion or spermatogenic activity, the fetus in utero is a male. If, on the other hand, the testicles show evidence of congestion and karyokinetic activity, the fetus is a female. Klotz was able to predict the sex correctly in 93 per cent of 89 cases by using the Dorn-Sugarman method.

It will be interesting to know the incidence of correct predictions if and when the author will have performed the test one thousand times. The reviewer has not seen any reports in the American literature during the last few years covering the Dorn-Sugarman test.

A Study on Oxygen Toxicity at Atmospheric Pressure with Special References to the Pathogenesis of Pulmonary Damage and Clinical Oxygen Therapy. By Wilhelm T. L. Ohlsson. This work also appears as Supplement CXC (190) to Acta medica scandinavica, Vol. CXXVIII. Paper. Pp. 93, with 12 illustrations. Håkan Ohlssons Boktryckeri, Lund, 1947.

In this interesting monograph the author presents a comprehensive review of work by previous investigators in the field of oxygen toxicity together with a detailed report of his own experiments. Particular reference is made to the effects on human subjects of inhalation of oxygen at partial pressures up to one atmosphere.

In his own investigations the author exposed animal and human subjects to increased oxygen pressures in an ingenious chamber which, by means of automatic devices for replenishing oxygen, permitted oxygen concentration to be maintained at the desired level. The chamber, large enough to accommodate 2 men, obviated the use of a face mask. Human subjects remained in the chamber 2 at a time in an atmosphere containing 78 to 88 per cent oxygen, for from fifty-three to fifty-seven hours. Animal experiments involved exposure of normal rabbits and rabbits with pulmonary damage inflicted by blast or diphosgene to high concentrations of oxygen in the same chamber. The various experiments appear to have been well controlled.

On the basis of his own experiments and his analysis of work by previous investigators the author concludes that the pulmonary damage caused by inhalation of high partial pressures of oxygen for prolonged periods of time is produced not by a direct irritant effect on the bronchial or alveolar wall but by an indirect effect on the pulmonary capillaries. It is suggested that the principal factor in the causation of pulmonary damage is a disturbance in the carriage of carbon dioxide by the blood resulting from inhalation of high partial pressures of oxygen. The author concludes his monograph by application of his concept to clinical use of oxygen.

The views and evidence presented by the author are by no means conclusive, but a challenge is offered which should be of considerable interest to workers in the field of oxygen therapy.

A Manual of Fractures and Dislocations. By Barbara Bartlett Stimson, A.B., M.D., Med.Sc.D., Assistant Professor of Clinical Orthopedic Surgery, College of Physicians and Surgeons, Columbia University, New York. Second edition. Fabrikoid. Price, $3.25. Pp. 223, with 98 illustrations. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1947.

This handy and concisely written manual will undoubtedly find favor with medical students, interns and the general practitioner for whom it was intended. It is up to date and gives a clear picture of the general approach to the subject of fractures and dislocations.

The course of treatment is outlined for the more common types of fractures in a clearcut manner representing an accurate consensus of present day practice. The author, who is well qualified by training, practice and association, wisely refrains from discussing controversial subjects which at the moment would serve to increase confusion in the minds of the student and general practitioner.

As a foundation manual for the student and as a ready reference guide for the general practitioner, this manual should serve its purpose admirably.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

CHRONIC LEG ULCERS

To the Editor:—I have been taking care of an aged woman for two weeks on account of an ulceration of the lower part of the leg over the calf muscles. This lesion developed probably after a mild thermal injury, went untreated for three weeks and measured 50 mm. when I saw it first. The ulcer is surrounded by an area of redness and induration; otherwise the tissues are soft and not tender proximally, while distally some edema is present. It has been enlarging and deepening and has resisted all treatments which I have applied: alternating hot and cold immersions, ointments in water miscible bases containing tyrothricin, sulfonamides, penicillin, chlorophyll, cod liver oil and baking soda. Recent examination showed normal urine findings, normal blood sugar (fasting), mild hypertension (180 systolic), and there is and always was sensitivity to all drugs used, including salicylates, glyceryl trinitrate and morphine. Patient has a kyphosis, which makes me hesitate to confine her to bed (which she wouldn't do anyhow). The Wassermann reaction is negative. Bacteriologic examination should probably be done. I would appreciate your opinion and advice.

M.D., New York

ANSWER.—Chronic leg ulcers in the aged, although secondarily infected, heal with difficulty if at all, primarily because of arteriolar sclerosis and possibly involvement of the major arterial pathways. In addition there is always delay in healing and considerable edema in ambulatory patients. Such patients must observe absolute bed rest, with warm fomentations. They stand local application of antibiotics not too well and usually become sensitized to sulfanilamides. Aluminum subacetate dressings in 1:8 solution are soothing and may be covered with wax paper, although if the skin is irritated around the ulcer it is best to cover it with Lassar's paste. A bacteriologic study may direct attention to one of the newer antibiotics, but most important is the detection of pyocyaneus infection, which can be controlled by 0.5 per cent solution of phosphoric acid. If the pulses of the foot and the popliteal fossa are absent, an effort may be made to increase circulation by intermittent venous hyperemia, but only when the inflammation and the edema have subsided. If pain is constant and peripheral circulation is poor, amputation may still be considered even at the age of 86.

EFFECT ON THE TEETH OF TAKING IRON

To the Editor:—What is the recent status of iron and iron compounds in "the falling out" of fillings of the teeth? Recently a patient was told by her dentist that the cause of her fillings falling out was possibly her taking too much iron.

Raymond F. Sheely, M.D., Gettysburg, Pa.

ANSWER:—A brief review of recent periodical medical and dental literature fails to reveal any discussion of the effects on normal teeth or metallic restorations and fillings of taking iron in any of its various forms used in therapy. Years ago the opinion prevailed among physicians and dentists that taking tincture of ferric chloride or other forms of iron was injurious to the teeth. There appears to be no laboratory or clinical research to justify such an opinion. Apparently this opinion developed because of the staining of teeth which may result from taking solutions of iron unless taken through a tube and swallowed without its coming in contact with the teeth.

Research dentists and biochemists now seem to discount or minimize the former opinion of injurious effects of taking iron other than staining of the teeth. Various causes may account for the falling out of fillings, such as further decay and imperfect mixing. It has also been established that there is a certain amount of electro-potentiality between dissimilar metallic restorations in the mouth in which the saliva acts as a good electrolyte. Therefore in an individual who is taking iron and who has multiple or large metallic restorations fixed by cement containing oxyphosphate of zinc, it might be possible for some dissolution of exposed cement to occur in sufficient amount to cause loosening or falling out of the fillings. This accident would result from the local contact of iron, which might serve as the electronegative metal.

The general opinion now seems to prevail among research dentists and physicians that the injurious effects on fillings of taking iron were formerly overestimated or are approximately nil, except for the stains which may occur on the teeth and which can be removed by immediate brushing.

METHOD OF STERILIZATION

To the Editor:—I would appreciate information regarding Dickinson's method of electrocoagulation of the tubal cornua and its usefulness as a practical method of sterilization. Please give references.

Luis Alonso, M.D., Ponce, Puerto Rico.

ANSWER.—In 1916 R. L. Dickinson (*Surg., Gynec. & Obst.* **23**:203 [Aug.] 1916) described his technic of performing intrauterine cauterization of the tubal ostia by means of a nasal tip cautery. In 1929 he suggested visualization of the cauterization by means of x-ray shadows from injected iodized oil or the use of a hysteroscope (THE JOURNAL, Feb. 2, 1929, p. 373). In 1934 M. H. Hyams (*Am. J. Obst. & Gynec.* **28**:96 [July] 1934) described an instrument which he devised and the technic he developed for performing intrauterine sterilization. His technic consists in coagulating the tubal openings inside the uterus by means of a high frequency current under direct vision with the fluoroscope. Hyams performs this operation in his office. No anesthesia is required. C. Schroeder (*Arch. f. Gynäk.* **156**:407 [April] 1934) experimented with intrauterine electrocoagulation of the tubal ostia aided by means of a hysteroscope. He obtained negative results, which he claims is due to the great power of regeneration which the tubal epithelium possess. He therefore was of the opinion that there cannot be developed a satisfactory means of producing sterilization through the uterus. The fact is that except for Hyams there has been little enthusiasm for the use of electrocoagulation of the tubal cornua as a practical method of sterilization.

POSTMENOPAUSAL OSTEOPOROSIS

To the Editor:—In The Journal, May 31, 1941, page 2465, there appeared an article on postmenopausal osteoporosis by Albright, Smith and Richardson. This disease is characterized by rarefication of the bones, especially of the spinal column, and sometimes is accompanied with pathologic fractures. The lack of calcium in the bones is not due to lack of calcium in the blood but rather to a deficiency in the osteoblastic cells. The supposition is that the osteoblasts, lacking the stimulation of hormones, which grow less at that time of life, become inactive and fail to lay down new bone as the old is broken down by catabolic processes. During the past year I have had under my care 2 patients between 55 and 60 years of age whose symptoms have corresponded with those described. X-rays of the spine in each of them showed extensive rarefication with multiple fractures. Following the suggestions in the article quoted I treated them with ten to twenty thousand units of estrogenic substance and large doses of vitamin B complex intramuscularly weekly. I have been unable to find other authority for this description and treatment and would like to know if it has been confirmed elsewhere and whether my treatment is appropriate, whether other treatment would help, and what the ultimate prognosis is.

M.D., Ohio.

ANSWER.—Osteoporosis resulting from loss of calcium salts in the bones may be on the basis of one or many factors. It is very doubtful that the demineralization which is so often seen in patients who are 50 years of age or older is the result of endocrine dysfunction primarily.

The condition is fully as frequent in males as in females. The diet which is deficient in calcium is very common among adult American citizens. Poor utilization of calcium that is present in the diet may be the result of a deficient intake of vitamin D. Intermittent periods of even slight negative calcium balance may, after many years, bring about sufficient loss of calcium salts from the bones to create a condition similar to that described in this query.

There have been insufficient studies of large enough groups of middle aged or elderly patients to justify any definite conclusions with regard to the effectiveness of therapy such as described for this patient. Clinical evidence of improvement has been reported for many patients who have been given calcium and vitamin D supplements with or without the endocrine and vitamin B therapy. Vitamin D in a solution which makes its absorption more certain, such as the crystalline D dissolved in propylene glycol, and calcium lactate 1 Gm. (15 grains) three times a day, have definitely been shown to reverse the process of calcium loss, making calcium retention constant and adequate.

VITAMIN E AND PROGRESSIVE MUSCULAR ATROPHY

To the Editor:—What is the present status of vitamin E therapy in the treatment of progressive muscular atrophy?

M.D., New York.

ANSWER:—Vitamin E has not been shown to be of value in the treatment of progressive muscular atrophy. At one time vitamin E was thought to retard the progress of amyotrophic lateral sclerosis, but this form of treatment has largely been abandoned. For the muscular dystrophies vitamin E is still used, but its value appears to be slight or nil.

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PATENT DUCTUS ARTERIOSUS

To the Editor:—I am writing to inquire about the advisability of operating on a patient with patent ductus arteriosus. A white woman aged 37 has been pregnant three times. All pregnancies were normal and uneventful. She is now pregnant for the fourth time and is three months along. Ten years ago at the time of her first pregnancy she was told that she had a patent ductus arteriosus. Nothing was done about it, and she has never had any symptoms referable to her heart at any time in her life. At present she is still asymptomatic. She is well developed and well nourished. Her blood pressure is 125/50. On x-ray examination her left ventricle is found to be just slightly enlarged to the left. There is also slight enlargement of the left auricle. The pulmonary conus is very prominent. The hilar vessels are moderately enlarged and there is a mild hilar dance on fluoroscopy. There is a typical loud continuous machinery murmur heard in the second and third left interspaces and transmitted toward the carotids. It is felt that the diagnosis of a patent ductus arteriosus is definite. The question is should a woman of this age, previous history and present status be advised to undergo an operation? If operation is indicated, should she be operated on immediately or after the present pregnancy is over?

David H. Barker, Captain, M. C., Fort Benning, Ga.

ANSWER.—There are two schools of thought concerning indications for ligation of a patent ductus arteriosus. One group believes that operation should be done only for specific indications, such as failure of growth, congestive heart failure, either actual or incipient (including cardiac enlargement) and subacute bacterial endarteritis. The other group believes that in the hands of an experienced surgeon the low mortality rate with elective operation constitutes less risk than to hazard one of the possible complications and its consequent operation of necessity.

This patient apparently has a ductus of only moderate size and is not likely to develop cardiac decompensation except with myocardial damage due to other causes, such as coronary arteriosclerosis. She is, however, a candidate for subacute bacterial endarteritis, which would at the same time necessitate operation and make surgical ligation more dangerous. Realizing that there are probably valid arguments to the contrary, ligation of the ductus after the successful full term termination of the present pregnancy might be advisable.

PREGNANCY AND HYPERTENSION

To the Editor:—A slender woman of twenty-nine has had severe intermittent headache since October, 1946. Hypertension of 150/100 to 220/120 was discovered at that time. A sympathectomy was done on the right (technic unknown) in December, 1946. The patient refused to have the other side operated on. The last menstrual period was November 16, 1946 and the patient felt life about six weeks ago. Two previous pregnancies miscarried spontaneously at three months. She now has a blood pressure of 160/110, and feels well save for pain in the right lower quadrant. The retinal arteries show slight narrowing. The cardiac reserve is good. The urinalysis is negative. More exhaustive cardiovascular renal studies in December are said to have been negative. Does sympathectomy or unilateral sympathectomy affect the mechanics of parturition? What is the estimated risk of carrying this woman to term? Should the pregnancy be terminated now? If carried to term should delivery be by section?

M.D., Calif.

ANSWER.—Unilateral sympathectomy would not affect the mechanics of parturition. It would seem advisable to attempt to carry this woman until the fetus is viable at thirty-two weeks. During this time she should be under close observation for the development of signs of renal toxemia, renal damage or myocardial insufficiency. Should symptoms of these appear the pregnancy should probably be terminated forthwith. If these complications do not develop, the uterus should probably be emptied between the thirty-second and thirty-sixth week. Cesarean section would be the operation of choice, particularly if the cervix is long and if the head is unengaged. If the head should be engaged and the cervix effaced, labor could probably be induced by artificial rupture of the bag of waters.

SULFADIAZINE AND RHEUMATISM

To the Editor:—Is there any danger in giving sulfadiazine to a person with rheumatic heart disease with probable active myocarditis and frank lobar pneumonia, if it is considered that the response to penicillin alone is not satisfactory?

Lyman O. Warren Jr., M.D., Boston.

ANSWER.—The sulfonamides have been accused, in recent years, of causing myocardial irritation and damage, and it seems probable that on occasion this accusation is justified. It is possible that some individual hearts may be more susceptible to such toxic effects than others, but certainly any pronounced changes of the sort are very rare. It would seem that there is little danger in giving sulfadiazine to a person with active rheumatism if the drug is necessary for some other infection which is not adequately controlled by penicillin alone.

HYPERVENTILATION

To the Editor:—Two patients suffer with hyperventilation. In one there is constant deep, sighing respiration. In the other it is intermittent but the results are much more intense. Please give me any information available on hyperventilation.

Charles T. Sharpe, M. D., New York.

ANSWER.—Symptoms induced by voluntary overbreathing include dizziness, numbness and tingling of the extremities, emotional reactions including fear and apprehension, autonomic reactions such as pallor, sweating and tachycardia, and finally, if carried far enough, tetany. Individual susceptibility to hyperventilation varies sharply. Some persons may collapse and exhibit tetany after fifteen to twenty minutes of moderate overbreathing (minute volume doubled); others may continue much longer with only mild symptoms. With extreme hyperventilation, symptoms develop rapidly and progress to tetany. These symptoms are associated with respiratory alkalosis, i. e., a 'washing out' of carbon dioxide with a fall in arterial carbon dioxide tension (acapnia) and a rise in blood p_H (alkalemia). Tetany usually occurs when the p_H has risen to 7.6. While the exact mechanism by which these changes in blood chemistry produce the symptoms is uncertain, it is known that acapnia reduces cerebral blood flow and that alkalemia increases the excitability of the cerebral motor cortex and peripheral nerves. Whether the tetany seen in severe cases is a direct effect of the alkalemia or is produced indirectly by a fall in serum ionized calcium is uncertain. Total serum calcium in hyperventilation tetany is normal.

Clinically, hyperventilation may occur in several conditions, including arterial anoxia, organic disease of the central nervous system, particularly encephalitis, and emotional disturbances. Arterial anoxia produces hyperventilation by a chemoreflex mechanism, and the deleterious effects of the acapnia are added to those of anoxia. This hyperventilation syndrome may occasionally become a serious problem in aviators, especially under combat conditions in which emotional hyperventilation is added to anoxic overbreathing. Cases of encephalitis have been reported in which hyperventilation persisted for prolonged periods. During such chronic hypocapnia the alkalemia may be almost completely compensated by renal excretion of bicarbonate.

Of particular clinical interest is the hyperventilation which occurs in nervous, unstable, psychoneurotic persons and which may best be called emotional hyperventilation. These patients, who are most frequently women with an unstable emotional makeup, may exhibit either persistent rapid shallow breathing, or a periodic, irregular, deep sighing respiration. They often complain of inability to obtain a satisfying breath, of sensations of suffocation and may show in addition any or all of the symptoms previously described. Such cases have been confused with pulmonary disease, heart disease, hyperthyroidism and, if tetany occurs, epilepsy. Emotional hyperventilation of this kind is a frequent finding in effort syndrome. Diagnosis can be established by having the patient hyperventilate voluntarily and thus reproduce his symptoms, as well as by controlling the symptoms by means of carbon dioxide inhalation or simple rebreathing into a bag. Treatment includes explaining to the patient the mechanism of his symptoms, reassurance, and the treatment of the underlying emotional disturbance. Some believe that calcium and an acid ash diet may be of value.

CRITERIA OF CURE OF LYMPHOGRANULOMA INGUINALE

To the Editor:—A man aged 23 contracted lymphogranuloma inguinale in September 1946. Two Frei tests were positive. Under treatment with sulfadiazine and sulfamerazine the inguinal lymph nodes healed, so that now only small hard discrete indolent lymphadenopathy exists but no open lesion. The patient wants to get married. What are the criteria of being cured after an infection with lymphogranuloma inguinale? When is lymphogranuloma inguinale contagious?

Kurt Wiener, M.D., Milwaukee.

ANSWER.—In the consideration of infections caused by the virus of lymphogranuloma venereum the word "cure" must be used with reservations. Female patients have been known to develop rectal strictures long after the complete subsidence of inguinal adenopathy and apparent cure. This does not necessarily obtain in males. A patient may be said to have been cured if adequate sulfonamide therapy was administered during the acute phase of the disease and if, with subsequent healing and disappearance of all symptoms, a reversal of the Frei reaction follows. If a positive Frei reaction persists, cure may be assumed if the serum albumin-globulin ratio is normal and a low titer is obtained on performing the complement fixation test for lymphogranuloma venereum. Contagiousness is said to exist as long as there are open lesions.

THE CARE OF EPILEPTIC CHILDREN

To the Editor:—I am interested in a girl aged 13 who had a normal birth but at the age of 2 developed a severe case of measles, complicated with encephalitis. She was seen at Ann Arbor, Mich., and was sent to a special school. About one year ago following a fall she started with attacks of grand mal epilepsy. The school now informs the parents that the care is too much for its facilities. If you can suggest any place for such a patient I would appreciate it. These people are not in favor of a state institution. Howard J. Murphy, M.D., Toledo, Ohio.

ANSWER.—This appeal illustrates the tragic lack of facilities for the care of epileptic children whose parents shrink from placement in a state institution. This known lack emphasizes the necessity of making sure that the child's seizures cannot be brought under control so that she can stay at home and attend a public school, either general or "special." Is she receiving the best possible drug or combination of drugs? If home care is not possible, advice should be sought from social agencies that are especially interested in the problem of epilepsy, giving to them information regarding family finances and details of the child's seizures, intelligence and disposition. The Ohio Society for the Crippled and Handicapped, 5 West Broad Street, Columbus, is interested, also the American Epilepsy League at 50 State Street, Boston.

GYNECOMASTIA

To the Editor:—I have a patient who is extremely self conscious about his enlarged breasts. In some ways he appears to have a mild Fröhlich's condition. His genitalia are small but within normal limits and he is capable of having normal sex relations. He has had treatments by other doctors with pituitary and testosterone, without apparently any effect in reducing the size of his breasts. From a psychotherapeutic view would it be justifiable to do surgery in this case in order to reduce the size of the breasts to normal? If surgery is justifiable, what kind of an operation would be most advisable? I will appreciate any suggestions you may have to offer. M.D., Michigan.

ANSWER.—A man who suffers from gynecomastia can be relieved by surgical means alone, according to the information and experience available to date. This is considered entirely justifiable and in such a patient as described the operation should be a complete bilateral simple mastectomy. This can be done without the removal of the nipples, if that is desired. If all breast tissue is removed, recurrence would not be expected. Such a patient may profit by a more intensive study of pituitary and gonad function. Several varieties of disturbances have been described recently. For the most details, reference is made to the paper by C. G. Heller and W. O. Nelson in the *Journal of Clinical Endocrinology* **5**:1 (Jan.) 1945.

ANDROGENS

To the Editor:—A man aged 48 has been taking Metandren Linguets 5 mg. each, five to ten of the linguets daily when he is taking them. He probably averages taking them ten to fifteen days each month. The patient also takes occasional intramuscular injections of one of the androgenic substances, 25 mg. to the dose, probably three or four times monthly. He states that they help him considerably as far as energy and a general sense of well being are concerned; also that they seem to help in his sexual ability, although he felt that he was perfectly normal in that respect without any assistance from the preparation. The patient was advised to take these preparations by a physician in another city and has now come to me with questions as to whether any harm might come of continuing the use of the androgenic substances.
C. L. Attaway, M.D., Ville Platte, La.

ANSWER:—There is no indication from the information given that this patient is in need of therapy with androgens. It is probable that the beneficent effects noted by the patient from their administration is a result of suggestion. In normal men testosterone causes a reduction in spermatogenic activity by its depressing effect on the testis. Although usually not attended with untoward effects, the use of testosterone, particularly in larger doses for protracted periods, may be accompanied with dyspnea, palpitation, edema of the ankles and chest pain.

HEART BLOCK

To the Editor:—I would like information on the value of treating a white man aged 62 who has complete heart block and aortic and mitral stenosis and the history of rheumatic fever at the age of 16 and rheumatic pains in the left knee ever since. If penicillin is at all effective for the treatment of the heart block, I should like to know the daily dosage and duration of treatment. Clifford T. Wadd, M.D., Janesville, Minn.

ANSWER:—There is no evidence that penicillin is beneficial in heart block associated with rheumatic valvular heart disease. In general, it can be said that penicillin is effective only in infections that are caused by micro-organisms that are sensitive to its action.

DIET IN PREGNANCY

To the Editor:—Please give information concerning the high protein-low carbohydrate, salt-restricted diet in pregnancy in order to prevent toxemia. M.D., Colorado.

ANSWER:—De Lee and Greenhill (Principles and Practise of Obstetrics, ed. 9, Philadelphia, W. B. Saunders Company, p. 94) say, concerning the diet in pregnancy, "According to the Committee on Food and Nutrition, National Research Council, the average daily requirement during the latter half of pregnancy is 2,500 calories. The Council specified that the daily requirement of protein is 85 Gm. but it did not indicate the amounts of carbohydrate and fat. Becker, Bickerstaff and Eastman state that the daily requirements for nonpregnant adults should be taken by pregnant women, namely from 50 to 70 per cent of the total calories as carbohydrate and from 20 to 35 per cent as fat. The tendency in pregnancy has been to restrict proteins because of the fear that proteins are an etiologic factor in the development of toxemia. However, in pregnancy there is a greatly increased demand for proteins, and unless this is met the results may be nutritional edema and anemia (Arnell and Guerriero). Furthermore, Hunscher and her associates have shown that the greater the retention of nitrogen in the latter half of pregnancy the better the outlook for a good supply of milk. Hence a liberal supply of nitrogen rather than a restricted amount should be recommended to pregnant women. On the other hand, sodium in the form of table salt, sodium bicarbonate and other alkalis containing sodium should be curtailed because excessive amounts may produce edema and lead to toxemia (de Snoo and Strauss). At least five full glasses of water should be taken daily in addition to a quart of milk."

In the discussion of the treatment of preeclampsia (p. 327) these authors say "The patient should be instructed to omit table salt from all food either during cooking or at the table. She must not eat salty food such as ham, crackers, salt fish and pretzels. Likewise, she must not take sodium bicarbonate, citrocarbonate or any "patent" medicine which contains alkaline salts. Strauss believes that 15 per cent of all women with toxemia of pregnancy suffer from water retention. Edema, hypertension and albuminuria sometimes develop after the patient takes large amounts of alkali for heartburn or eats a fish dinner rich in sodium chloride. The symptoms of toxemia in such cases disappear after sodium is omitted from the diet."

In a paper on "Toxemia of Pregnancy, Types, Etiology and Treatment," M. B. Strauss (*Am. J. Obst. & Gynec.* **34**:199 [Aug.] 1939) said "Since hypoproteinemia is one of the more important factors which permit the development of water retention, adequate prepartum care must include attention to the prevention of this condition. Although disturbances of absorption, assimilation, manufacture and urinary loss of protein may be involved, it appears that the chief cause of hypoproteinemia in pregnancy lies in inadequate dietary intake of protein of good biologic value, especially in view of the increased demands for protein for the developing fetus and also for the maternal organism. It is therefore of paramount importance that the diet in pregnancy contain more, not less, protein than an adequate diet for nonpregnant subjects. It is likewise important that the pregnant woman avoid an excessive intake of sodium salts under any conditions, and, if she has low plasma proteins sodium restriction must be used. Anemia, which is conducive to water retention, is to be avoided by proper prophylactic measures.

PAIN IN UPPER ARM

To the Editor:—In Queries and Minor Notes, September 13, page 132, under the heading "Pain in Right Upper Arm," both the question and the answer are unsatisfactory. Mention is not made of the presence or absence of local tenderness. This omission is important as it may be an example of a general tendency to overlook the importance of local tenderness during physical examination. Localized fibrositis cannot be excluded without assurance that local tenderness was absent. The history and the fact that x-rays were completely normal suggest fibrositis. If there is tenderness and a mass at the site of the original injury the diagnosis of fibrositis would be clear. It would have been more accurate if the questioner had said he suspected a neurosis because all disease is said to be psychosomatic.
Paul P. Swett, M.D., Bloomfield, Conn.

NEUROCIRCULATORY ASTHENIA

To the Editor:—In The Journal, September 6, page 69, appears a discussion of "Hyperventilation in Neurocirculatory Asthenia." The discussion on treatment failed to mention one drug which, during the acute episode of rapid breathing, I have used successfully. This is intravenous injection of 10 cc. of a solution of calcium gluconate. I have discussed this in a paper entitled "Hyperventilation Syndrome" (*J. Oklahoma M. A.* **37**:59-62 [Feb.] 1944). Unfortunately there are no reprints available. Robert C. Kirk, M.D., Columbus, Ohio.